HOOKER'S

ICONES PLANTARUM.

THIRD SERIES.—VOL. X.

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ICONES PLANTARUM;

OR,

FIGURES, WITH DESCRIPTIVE CHARACTERS AND REMARKS, OF NEW AND RARE PLANTS,

SELECTED FROM THE

KEW HERBARIUM.

THIRD SERIES.

EDITED FOR THE BENTHAM TRUSTEES BY

DANIEL OLIVER, F.R.S., F.L.S.

EMERITUS PROFESSOR OF BOTANY IN UNIVERSITY COLLEGE, LONDON: LATE KEEPER OF THE HERBARIUM AND LIBRARY, ROYAL BOTANIC GARDENS, KEW.

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OR VOL. XX. OF THE ENTIRE WORK

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R. FRIEDLÄNDER UND SOHN,
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1891

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SIR JOSEPH DALTON HOOKER, K.C.S.I., C.B., M.D., F.R.S.

D.C.L. OXON., LL.D. CANTAB., DUBLIN, EDIN., AND GLOTT., CORRESP. MEMB. INST. FRANCE:

LATE DIRECTOR OF THE ROYAL BOTANICAL GARDENS, KEW.

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Price Four Shillings.

M.S. lith.

Caralluma lutea, N.E.Br.

Plate 1901.

CARALLUMA LUTEA, *N. E. Br.*

Asclepiadaceæ. Tribe Stapelieæ.

C. lutea, *N. E. Br.* (*n. sp.*); ramis glabris 2–4 poll. longis, $\frac{1}{2}$–$\frac{3}{4}$ poll. crassis, tetragonis, angulis grosse dentatis; floribus fasciculatis, pedicellis $\frac{1}{3}$–1 poll. longis; corolla profunde quinquefida, 2–$2\frac{1}{2}$ poll. diam., lutea, tubo subnullo, lobis lanceolato-attenuatis, intus rugulosis, marginibus pilis clavatis purpureis ciliatis; corona exteriore cupulare, 5-loba, lobis latissimis ad medium connatis, apice truncatis denticulatis, recurvis, luteis; coronæ interioris segmentis bicornutis, postice coronæ exteriori adnatis, luteis.

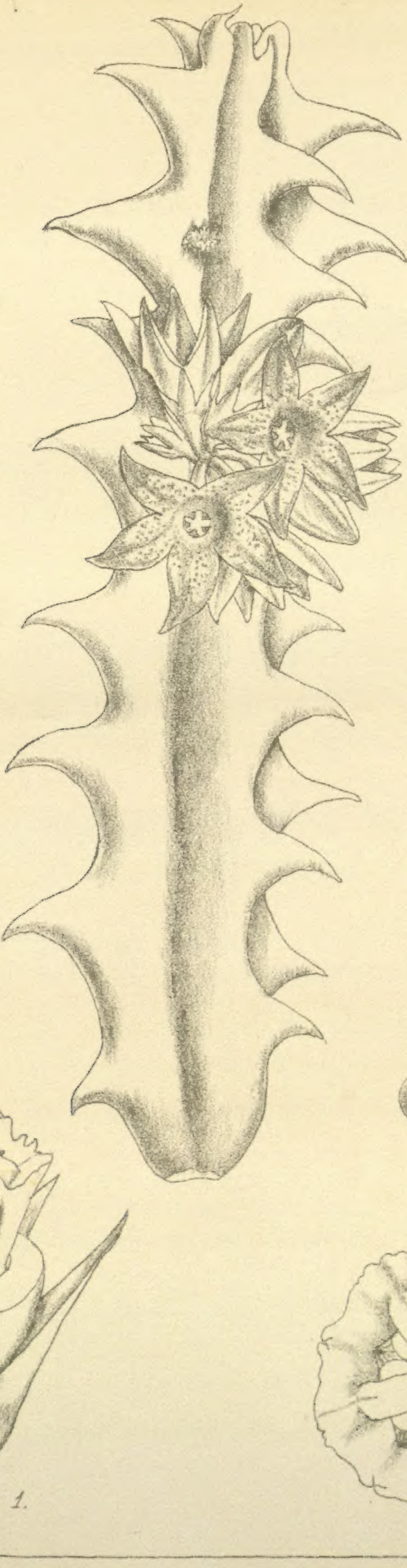
Hab. Transvaal, Orange Free State, and Griqualand West; common throughout the Diamond Field region; *Sanderson*, *Mrs. Barber*, *Tuck*, *MacOwan* (No. 2240), *Barkly* (Nos. 7 and 40).

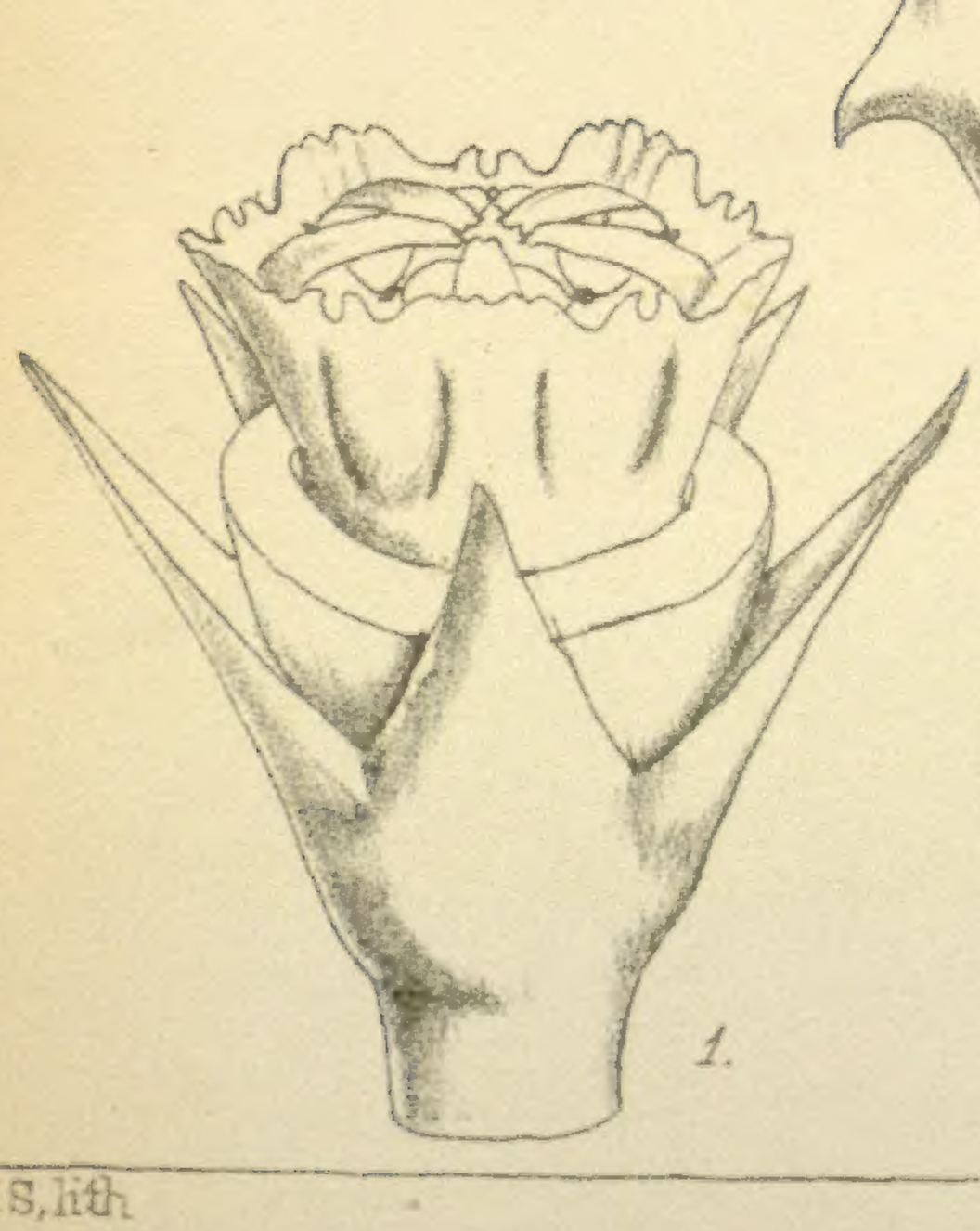
Stems branching at the base, 2–4 inches long, glabrous, 4-angled, angles obtuse with stout teeth. *Flowers* numerous, in large clusters, arising from the middle or towards the base of the young stems; pedicels $\frac{1}{3}$–1 inch long, stout, glabrous. *Calyx-lobes* ovate or lanceolate acuminate, $2\frac{1}{2}$–$3\frac{1}{2}$ lines long. *Corolla* 2–$2\frac{1}{2}$ inches in diam., deeply 5-parted, golden yellow, glabrous outside, rugulose within, tube almost wanting; lobes narrow, lanceolate, attenuate, ciliate with vibratile, clavate, purple hairs. *Outer corona* cup-shaped, of five very broad lobes, connate for about halfway up, truncate, denticulate, and recurving at the apex, and marked with about five ridges down the centre. *Inner corona* of five two-horned lobes, adnate to the back of the anthers and to the outer corona at the sinuses between the lobes; the horns are erect and subulate, the inner one twice as long as the outer, and recurving at the apex; both the outer and inner corona are of a rather darker yellow than the corolla. *Pollen-masses* ascending, somewhat oblong in outline, broader than long, truncate and pellucid-margined on the inner side.

This fine and rather showy plant seems to be somewhat intermediate in character between the genera *Stapelia* and *Caralluma*; the stems are similar to those of the section *Orbea* of *Stapelia*, but stouter than most of the species; the outer corona is essentially that of *Caralluma*, whilst the inner corona is something like that of *Stapelia olivacea*. This seems first to have been sent to England by Mr. Sanderson, the Kew specimen being thus labelled: 'From the Transvaal country,

brought by myself. This specimen flowered in the Agricultural Society's Garden, March 1854. John Sanderson.' Mrs. Barber states that 'it is the commonest of all the family up here (Kimberley), and occurs upon nearly every grassy ridge upon the flats, varying very much in appearance, and, although I have passed over acres of it, I have never yet met with a seed-pod; the plant blossoms profusely in autumn, producing large bunches of flowers, sometimes as many as 16 or 17 in a bunch, and yet I have found no seed upon it.' From this it would appear that it rarely produces fruit; an outline of the fruit, however, is given on a drawing sent to Kew by Mrs. Barber, in which the follicles are represented as about $3\frac{1}{2}$ inches long and moderately stout. The odour of the flowers is described by Sir Henry Barkly as 'very fetid, like that of putrid fish.'—N. E. Brown.

Fig. 1. Corona. 2. Portion of corona, to show the attachment of the back of the segments of the inner corona to the outer corona. 3. Pollinia. *All enlarged.*





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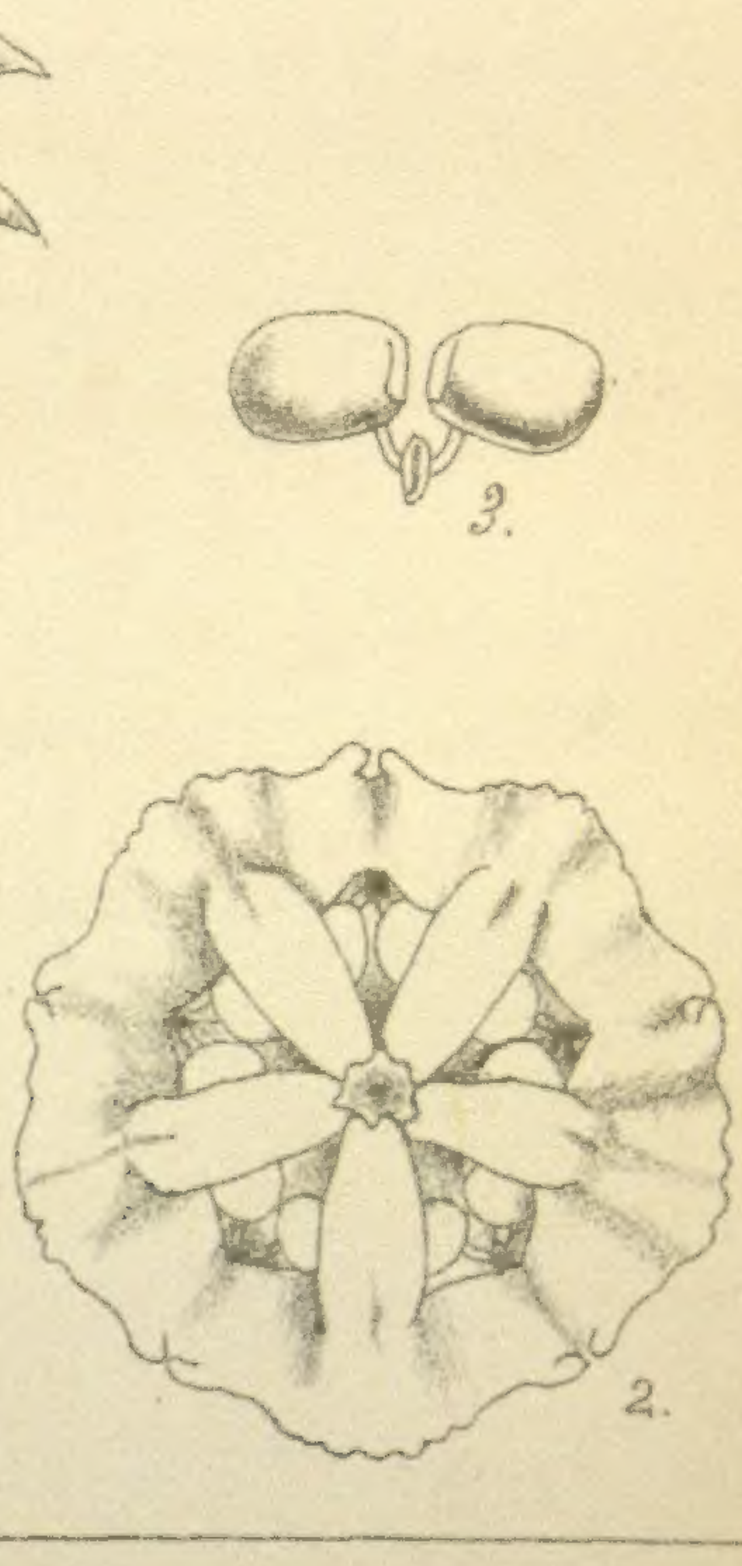


2.

3.

M.S, lith

Plate 1902.

CARALLUMA ARMATA, *N. E. Br.*

Asclepiadaceæ. Tribe Stapelieæ.

C. armata, *N. E. Br.* (*n. sp.*); ramis iis C. mammillaris similibus; corollæ tubo brevissime campanulato, lobis 4 lin. longis, lanceolatis acutis, marginibus replicatis, omnino glabris, atropurpureis vel fusco-purpureis, basi et tubo viridi-luteis, purpureo-punctatis; corona exteriore cupulare, truncata, margiuis partibus antheris oppositis minute erosis, partibus cum antheris alternis minute bidentatis; segmentis coronæ interioris oblongis emarginatis, arcte incumbentibus.

Hab. Foot of the Kamiesberg, Little Namaqualand. *Barkly* (No. 47).

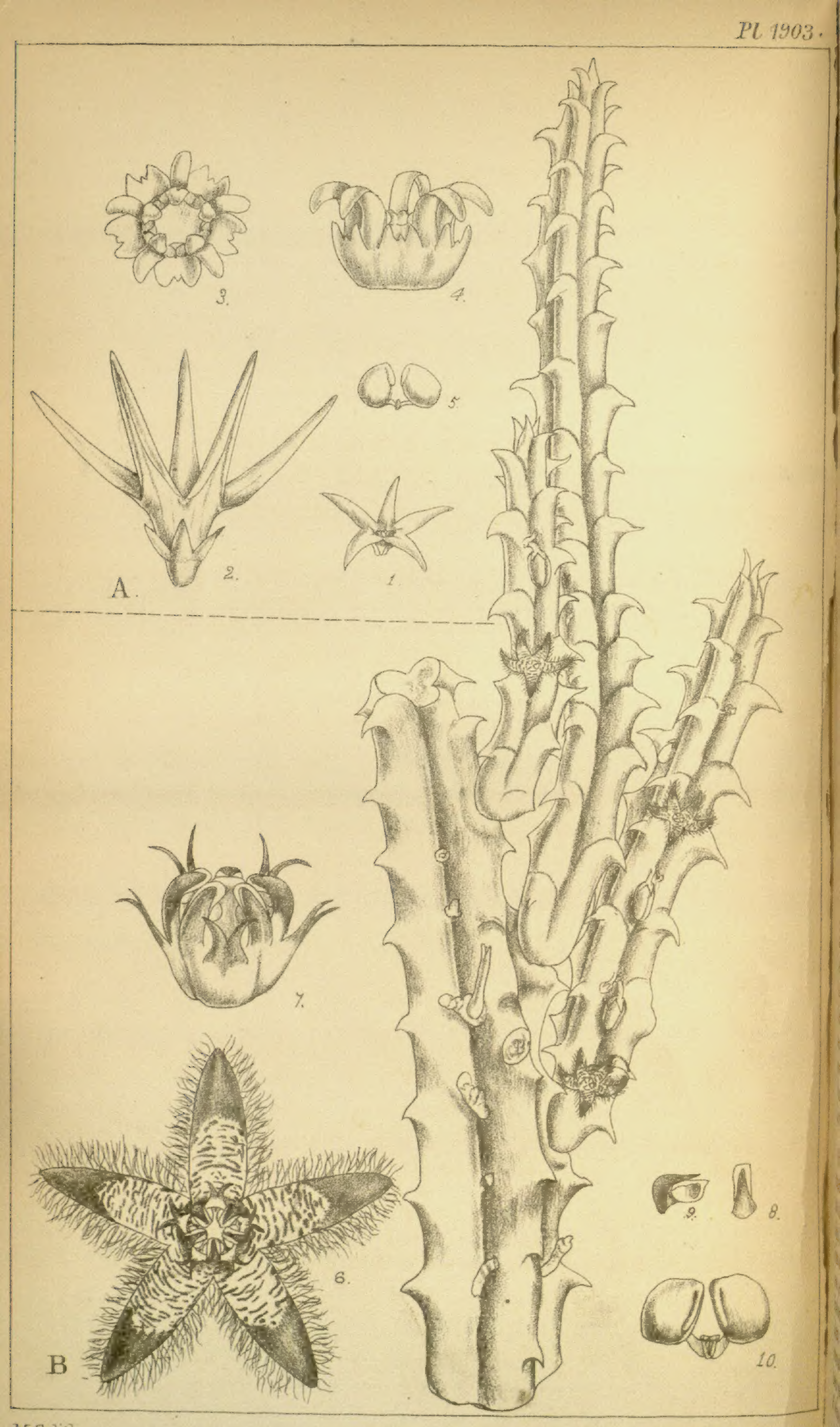
Stems just like those of *C. mammillaris*, and flowers clustered in the same way. *Pedicels* stout, 2 lines long. *Calyx-lobes* lanceolate acuminate, $\frac{1}{8}$ inch long. *Corolla* with a very short campanulate tube, and somewhat spreading, lanceolate, acute lobes, 4 lines long, with replicate margins; outside glabrous, greenish-white; inside glabrous, the lobes dark purple-brown, or blackish-purple, with their base and the tube greenish-yellow, dotted with purple. *Outer corona* cup-shaped, and truncate, with those portions alternating with the anthers minutely bidentate, and blackish-purple in colour, and those portions opposite the anthers minutely erose, and of a lighter purple-brown colour. *Segments of the inner corona* oblong, emarginate at the apex, not produced beyond the anthers, on which they are closely incumbent, purple-brown.

This species is very similar to *C. mammillaris* in its stems, but the flowers are smaller, on much longer pedicels, and have a very different corona.—N. E. Brown.

Fig. 1. Calyx and corona, with the corolla cut away. 2. Corona, front view. 3. Pollinia. *All enlarged.*

C. mammillaris, *N. E. Br.*—Stapelia mammillaris, *Linn. Mant.* p. 216 (1771). S. pulla, *Ait. Hort. Kew.* ed. 1, vol. 1, p. 310 (1789); *Masson, Stap.* p. 21, t. 31. *Bot. Mag.* t. 1648. Piaranthus pullus, *R. Br. in Mem. Wern. Soc.* vol. 1, p. 23 (1811); P. mammilaris, *Don, Gen. Syst. Gard.* vol. 4, p. 114 (1837). Pectinaria mammiliaris, *Sweet, Hort. Brit.* ed. 2, p. 357 (1830). Boucerosia mammillaris, *N. E. Br. in Journ. Linn. Soc. Bot.* vol. 17, p. 165, t. 11, f. 5–13 (1878).

Hab. Kamiesberg, Little Namaqualand, *Barkly* (No. 30).—N. E. Brown.



M.S. lith.

A. Caralluma linearis, N.E.Br.
B. dependens N.E.Br.

Plate 1903.

A.—CARALLUMA LINEARIS, *N. E. Br.*
B.—CARALLUMA DEPENDENS, *N. E. Br.*

Asclepiadaceæ. Tribe Stapelieæ.

A.—**C linearis**, *N. E. Br.* (*n. sp.*); ramis tetragonis glabris, angulis dentatis, dentibus parvis, brevissime indurato-apiculatis; pedicellis 1 lin. longis; corolla $\frac{3}{4}$ poll. diam., tubo parvo campanulato, intus albido, quam lobis linearibus patentibus atropurpureis triplo breviore; segmentis coronæ exterioris subquadratis, bifidis vel tridentatis, dente medio minuto; segmentis coronæ interioris linearibus, erectis, apice obtusis recurvis; folliculis $1\frac{1}{2}$ poll. longis, anguste fusiformibus.

Hab. Seven-weeks Poort, Zwartberg, *Bain* (No. 8), *Barkly*.

Stems glabrous, four-angled, angles shortly toothed, the teeth with a very short indurated point. *Pedicels* very short, about 1 line long, growing to about $\frac{1}{8}$ inch long in fruit, glabrous. *Calyx-lobes* ovate acute, $\frac{1}{10}$ inch long, glabrous. *Corolla* $\frac{3}{4}$ inch in diameter, quite glabrous, with a small campanulate tube, whitish inside, and spreading, linear, blackish-purple lobes, which are more or less replicate, and about three times as long as the tube. *Segments of the outer corona* subquadrate, deeply bifid or three-toothed, the middle tooth minute. *Segments of the inner corona* much longer than the anthers, flat, linear, erect, with recurved obtuse apices, blackish-purple or dark purple-brown. Follicles narrow fusiform, about $1\frac{1}{2}$ inch long; seeds narrow oblong, with a thick roll-like margin, and a rather short coma, the hairs being scarcely $\frac{1}{2}$ inch long.

Of this I have seen only a small piece of stem with follicles attached, and some loose flowers, dried and in spirits. The stem gives me the impression that it may be a dwarf plant only an inch or two high, but it may be that the piece at Kew is only a short shoot broken off from a larger plant; the teeth on the angles of the stem are very much less pronounced than in the other South African species that have distinctly toothed stems, and their indurated tips are very small and blunt, not spine-like. I am unable to state the colour of the outer coronal segments, but in the dried flower they are pallid, and may have been yellowish. The drawing is made from flowers preserved in spirits of wine, and the inner coronal segments are probably not so spreading

in the living state as shown in the drawing; more probably they are connivent.—N. E. Brown.

A.—C. linearis. Fig. 1. Flower, natural size. 2. Flower, side view. 3 and 4. Corona, front and side views. 5. Pollinia. *Figures* 2 to 5 *enlarged.*

B.—**C. dependens**, *N. E. Br.* (*n. sp.*); erecta, ramosa, pedalis; ramis tetragonis, glabris, angulis spinoso-dentatis; floribus binis vel ternis, e sulcis inter angulos ortis, breviter pedicellatis, abrupte deflexis; corolla rotata, 5 lin. diam., lobis anguste oblongis, subobtusis, 4 reflexis, 1 ad caulem adpresso, glabris, ciliatis, apice fusco-purpureis, basi luteo-viridibus, fusco-purpureo transversim lineatis; segmentis coronæ exterioris profunde bilobis, lobis subulatis, arcuato-divaricatis; segmentis coronæ interioris acuminatis, arcte incumbentibus.

Hab. From a farm 20 miles west of Clanwilliam, *Barkly* (No. 78).

Plant bushy, about a foot high; stems erect, glabrous, $\frac{1}{2}$–$\frac{3}{4}$ inch thick, 4-angled, angles rounded, with stout spine-like teeth, greyish or purplish green. *Flowers* 2–3 together, arranged along the grooves between the angles of the stem; pedicels 1–1$\frac{1}{2}$ line long, abruptly curved downwards; full-grown buds oblong, obtuse, pendulous, and closely applied to the stem. *Calyx-lobes* scarcely one line long. *Corolla* rotate, very deeply 5-lobed, 5 lines in diameter; four of the lobes reflexed, the fifth (the lower one) pressed flat against the stem, all narrow-oblong, subobtuse, glabrous on both sides, ciliate with long, soft, curly, purple hairs: apical half dark purple-brown, basal half light yellow-green, marked with transverse purple-brown lines. *Segments of the outer corona* deeply divided into two subulate, arching-divaricate lobes, purple-black with a yellowish base. *Segments of the inner corona* simple, acuminate, not longer than the anthers on which they are closely incumbent, purple-black. *Fruiting pedicels* $\frac{1}{2}$ inch or more long, and erect; fruit not seen.

A remarkable plant, resembling that figured by Masson as *Stapelia pruinosa* in general habit, but the stems have much longer and stouter spine-teeth. The curious way in which the lower lobe of the pendulous flowers is pressed flat against the stem, whilst the other four are reflexed, is different from that of any other species of the whole tribe known to me. The same cymes appear to produce flowers for two or more years, so that at length a sort of peduncle is developed; on the old stems of the plant, introduced to Kew by Sir Henry Barkly, some of these peduncles were nearly half an inch long, and all were more or less curved upwards. Whether the position of the corolla, and the reflexion of its lobes, would be the same on these older cymes as it is in the young cymes which I have described, I am unable to say, as I have seen no flowers on the older cymes; but there was the remainder of a fruiting pedicel on one of them, from which the follicles had been broken off, which showed that the pedicels elongate very

considerably during the growth of the fruit, and become erect. The corona is exactly the same as in the typical Indian species of *Caralluma*.

There is a specimen of this plant in the Berlin Herbarium, labelled as having been collected at Olifants River, and flowered in the garden of Mr. Hesse, but no date is mentioned on the label.—N. E. Brown.

B.—C. dependens. Fig. 6. Flower. 7. Corona. 8 and 9. Segments of the inner corona, with anther, front and side views. 10. Pollinia. *All enlarged.*

C. hottentotorum, *N. E. Br.*—Quaqua hottentotorum, *N. E. Br. in Gard. Chron.* 1879, vol. 12, pp. 8 and 9, f. 1.

Hab. Ookeep and Klipfontein, Little Namaqualand, *Barkly* (Nos. 27, 50, and 50 bis).

The Ookeep plant (No. 27) differs from that from Klipfontein in being destitute of an outer corona, and the inner corona less developed, but in every other respect is so perfectly identical with that plant that I cannot regard them as distinct from one another, and believe them to be merely local forms of one species. It may not be out of place to say that some difference will be observed between the corona as figured by me in the 'Gardeners' Chronicle' and that of specimens which have been dried or preserved in spirits, as in these latter a considerable amount of shrinking takes place, and the sides of the lobes of the outer corona are not folded in quite the same manner as when alive; my drawing represents the corona faithfully as seen when alive, under a compound microscope, and magnified about 30 diameters.—N. E. Brown.

M.S. del.

Caralluma ramosa, N.E. Br

Plate 1904.

CARALLUMA RAMOSA, *N. E. Br.*

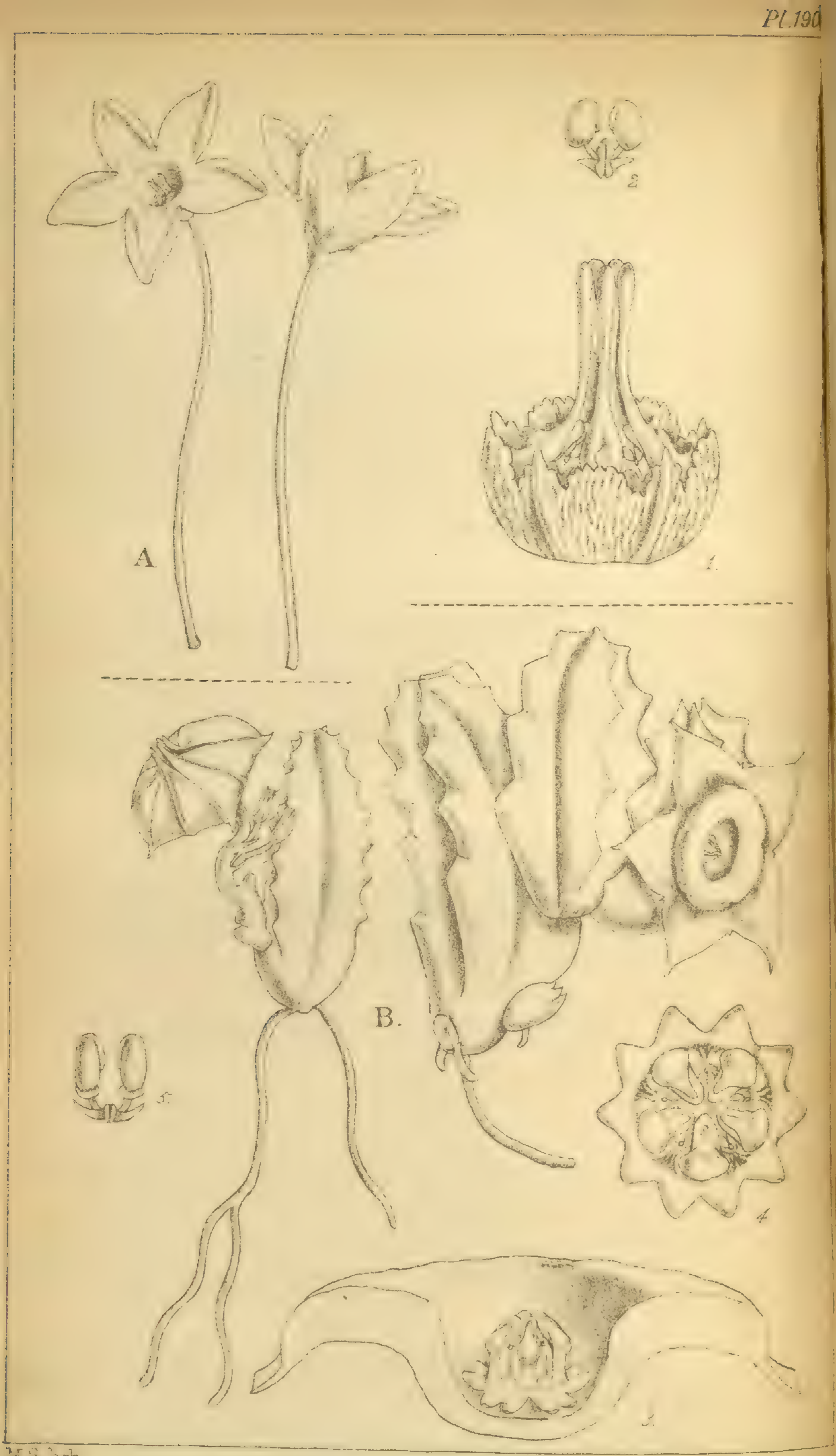
Asclepiadaceæ. Tribe Stapelieæ.

C. ramosa, *N. E. Br.*—Stapelia ramosa, *Mass m*, *Stap.* p. 21, t. 32 (1796). Piaranthus ramosus, *Sweet*, *Hort. Brit.* ed. 2, p. 359 (1830).

Hab. Groot Fontein, and near Vlak Kraal, on the Karoo; *Barkly* (Nos. 62 and 63).

As the flowers of this plant have never been properly described, I give the following particulars concerning them from Sir Henry Barkly's specimen. *Pedicels* very short, about 1 line long. *Calyx-lobes* ovate-lanceolate, acute, as long as the pedicels. *Corolla* with a short campanulate tube, glabrous outside, minutely pubescent within, and lanceolate, acute, replicate lobes, $2\frac{1}{2}$-3 lines long, with a rather acute ridge down their face, caused by being longitudinally folded, glabrous on both sides, not ciliate. *Outer corona* of five, very short, bifid lobes. *Inner coronal* lobes oblong, obtuse, closely incumbent on the back of the anthers, and scarcely or not at all exceeding them in length.—**N. E. Brown.**

Fig. 1. Flower, side view. 2 and 3. Corona, front and side views. *All enlarged.*



M. S. lith.

A. Caralluma aperta, N.E. Br.

B. Huernia hirsuta, Haw.

Plate 1905.

A.—CARALLUMA APERTA, *N. E Br.*
B.—HUERNIA HUMILIS, *Haw.*

Asclepiadaceæ. Tribe Stapelieæ.

A.—**C. aperta**, *N. E. Br.*; ramis glabris, glaucis, 2–2½ poll. longis, obtuse tetragonis, angulis vix dentatis; pedicellis 2½-3 poll. longis, adscendentibus vel erectis; corolla 1–1¼ poll. diam., glabra, tubo campanulato, lobis oblongis, obtusis, patentibus, marginibus reflexis, intus rugulosis, quam tubo duplo longioribus; corona exteriore cyathiforme, intus septis 5 antheris oppositis tubo staminco connexa, 10-crenata, crenis antheris oppositis majoribus, obtuse rotundatis, papillosis, crenis alternis minoribus, subacutis, brevissime et arcte lacerato-fimbriatis; coronæ interioris segmentis simplicibus, ad apicem in cornu erectum vel recurvum clavatum ⅛ poll. longum productis.—Stapelia aperta, *Masson*, *Stap.* p. 23, t. 37 (1796). Caruncularia aperta, *Sweet*, *Hort. Brit.* ed. 2, p. 359 (1830).

Hab. Little Namaqualand, *Barkly* (No. 19).

Stems 2–2½ inches long, obtusely tetragonal, glaucous, scarcely toothed. *Pedicels* 2½–3 inches long, ascending or erect. *Calyx-lobes* ovate, acute. *Corolla* 1–1¼ inch in diameter, quite glabrous, with a campanulate tube about half as long as the spreading, oblong, obtuse lobes, which have reflexed margins, and are rugulose inside. *Outer corona* cup-shaped, with septa connecting it to the staminal tube and base of the segments of the inner corona, very shortly 10-crenate, the crenations opposite the anthers obtusely rounded, thick and papillate, the alternate ones smaller, subacute, somewhat folded, and papillate-fimbriate on the margin. *Segments of the inner corona* simple, produced at the apex into erect, clavate horns, ⅛ inch long.

The structure of this plant has not previously been described; in habit it closely resembles *Stapelia pedunculata*, and has been previously associated with that species in the section *Caruncularia*, but the structure of the outer corona is so modified that it appears to be best to consider it as generically distinct from *Stapelia*, as otherwise the generic characters of that genus would have to be so modified that other genera having the segments of the outer corona more or less

united into one piece would have to be included in it: I therefore propose to place it as an aberrant species of *Caralluma*.—N. E. Brown.

A.—C. aperta. Fig. 1. Corona, side view. 2. Pollinia. *Both enlarged.*

Besides those species of *Caralluma* enumerated above, Sir Henry Barkly sent three others apparently belonging to this genus, but without flowers, so that I am unable to determine them with certainty; they are—

No. 29, from Kamiesberg, Little Namaqualand, possibly the same as No. 47, *C. armata*.

No. 46, without locality, is probably *C. mammillaris*

No. XCII., 'growing in large clumps in the rocks at a place called the Draai, division of Worcester.' A new species.—N. E. Brown.

B.—**Huernia humilis**, *Haw. Synop. Plant. Succ.* p. 30 (1812).—Stapelia humilis, *Masson, Stap.* p. 10, t. 5 (1796).

Hab. Collected in the Nieuwveld Mountains by Mr. Bain, and sent home by Sir H. Barkly as "*Bain X.*" I have not seen the living plant.—N. E. Brown.

B.—H. humilis. Fig. 3. Section through the annulus of the corolla. 4. Corona. 5. Pollinia. *All enlarged.*

TRICHOCAULON, *N. E. Br.*

T. cactiformis, *N. E. Br.*—Stapelia cactiformis, *Hook. Bot. Mag.* t. 4127.

Hab. Little Namaqualand. *Barkly* (No. 37).

Although differing from the other species of *Trichocaulon* in the want of the setæ which terminate the tubercles on the stem, I can find no structural character in the flowers to justify its separation from that genus. The plant is a very peculiar one, and cannot be mistaken for any other described species. So far as I have seen, it is the only member of the whole group of *Stapelieæ* that exhibits no tendency to branch. It was figured without a specific name as long ago as 1790 by Paterson, in his *Narrative of four Journies into the country of the Hottentots and Caffraria*; the plate of *Stapelia* following that of *Hermannia* at p. 60.

T. flavum, *N. E. Br. in Journ. Linn. Soc.* vol. 17, p. 165, pl. 11, f. 2–4, 1878.

Hab. Karoo, *Bain*; *Barkly* (drawing No. 15).

A fine plant from the Vaal River, of what I believe to have been this species, was sent to Kew by Sir H. Barkly in 1877, but it died

without flowering, and may possibly have been *T. piliferum*. Both species are called "Guaap" by the natives.—N. E. Brown.

HOODIA, *Sweet*.

H. Barklyi, *Dyer in Journ. Linn. Soc. Bot.* vol. 15, p. 252, pl. 5, f. 3 (1876).

Hab. Brought from the Karoo by Mr. Lycett to the Cape Botanic Garden in 1873, *Barkly* (No. 5).

H. Bainii, *Dyer in Bot. Mag.* t. 6348 (1878).

Hab. From Dwyka River and Uitkyk (Gamka River?), both on the Gouph Plateau, *Bain* (No. 11). I do not feel sure that the locality Uitkyk is the one marked on the map by the Gamka River, as Sir Henry Barkly informs me that it is a common name, meaning 'outlook,' and there may be a locality of that name on the Dwyka River, whence the plant was stated to have come when Sir Henry Barkly first sent it.

H. Gordoni, *Sweet, Hort. Brit.* ed. 2, p. 359 (1830); *Dyer in Journ. Linn. Soc. Bot.* vol. 15, p. 252, pl. 5, f. 1; and in *Bot. Mag.* t. 6228; *N. E. Br. in Gard. Chron.* 1875, vol. 4, p. 452. Stapelia Gordoni, *Masson, Stap.* p. 24, t. 40 (1796). Monothylaceum Gordoni, *G. Don, Gen. Syst. Gard.* vol. 4, p. 116 (1837). Scytanthus Gordoni, *Hook. Icon. Plant.* vol. 7, t. 625 (1844).

Hab. Henkries, 12 miles south of the Orange River, Little Namaqualand; a dried flower, and a living plant sent to Kew by *Sir H. Barkly* in 1874.

H. Currori, *Dcne. in DC. Prod.* vol. 8, p. 665 (1844); *Dyer in Journ. Linn. Soc.* vol. 15, p. 251, pl. 5, f. 2. Scytanthus Currori, *Hook. Icon. Plant.* vol. 7, t. 605–606, and mentioned as *S. Burkei* by an error under t. 625 (1844).

Hab. Damaraland, *Palgrave*, a dried flower and photograph communicated by *Sir H. Barkly*; Angola, *Curror, Monteiro*.—N. E. Brown.

DECABELONE, *Dcne.*

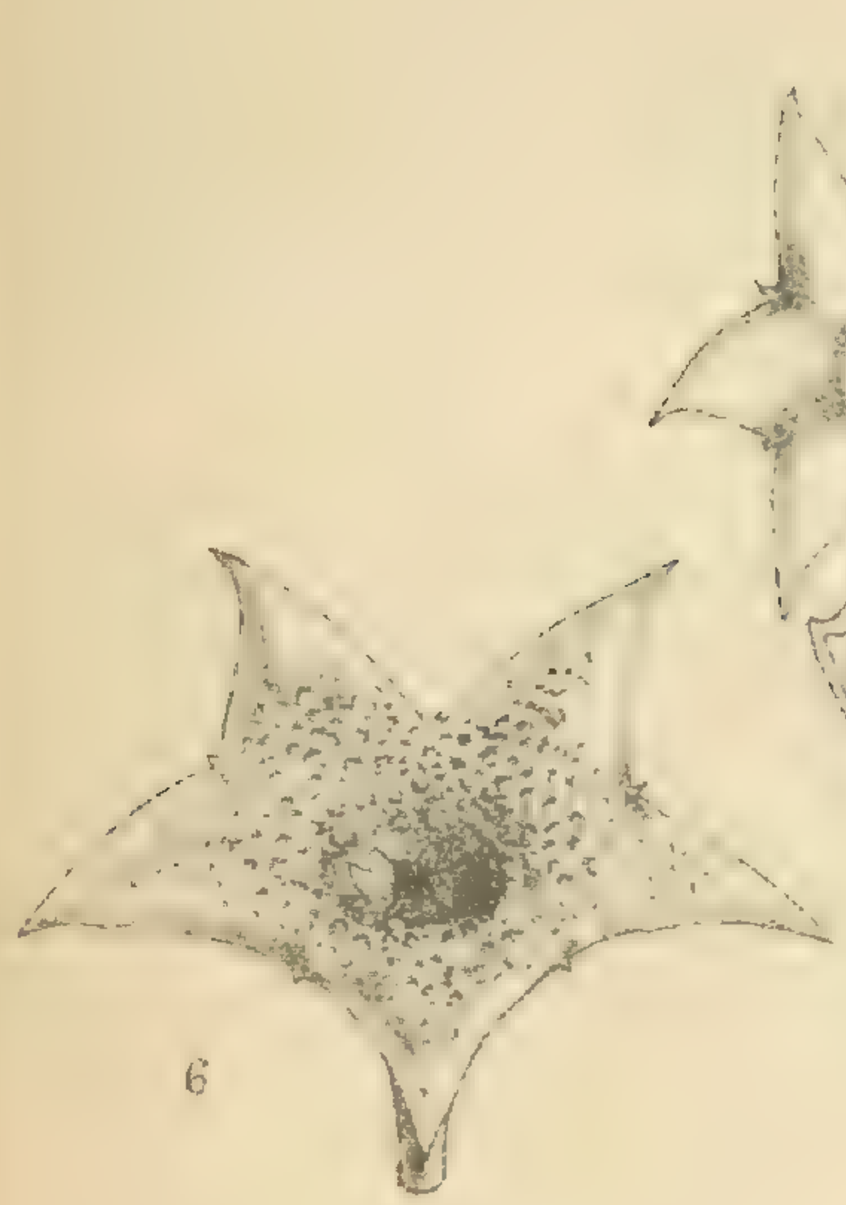
D. Barklyi, *Dyer in Bot. Mag.* t. 6203 (1875); and in *Journ. Linn. Soc.* vol. 15, pp. 249–250, pl. 5, f. 4.

Hab. Discovered by *Lichtenstein* in 1805, on the Karoo, near the Orange River, and refound by *Sir H. Barkly* in 1871, and by *Dr. Shaw* in 1874, in the same locality.

The interior corona of this remarkable plant is described as com-

posed 'of ten dissimilar processes, five slender and adnate to the anthers, upon which they are incumbent as in *D. elegans*, five alternating with these and one-third as long, broadly deltoid and bifid.' These bifid processes do not belong to the corona, but are formed by the edges of the stigmatic cavity, which at this part are sharply turned back. They are stated in the Journal of the Linnean Society to be absent in *D. elegans*; this statement was founded on the supposition that the drawing of the corona of *D. elegans* on pl. 6115, fig. 4, of the 'Botanical Magazine' was correct; this, however, is not the case: the stigma-processes should have been represented as they are on the plate of *D. Barklyi*, fig. 1, being alike in both species.

There are stems of this remarkable plant in the Berlin and Kew Herbaria labelled 'From the Gariep July 1805, *Lichtenstein* No. 184.'—N. E. Brown.



6

M S lith

Huernia pruinosa N. E. Br.

Plate 1906.

HUERNIA PRIMULINA, *N. E. Br.*

Asclepiadaceæ. Tribe Stapelieæ.

H. primulina, *N. E. Br.* (*n. sp.*); ramis 1–2½ poll. longis, ½–⅝ poll. diam., glaucis, acute 4–5-angulatis, angulis grosse dentatis, cymis paucifloris, pedicellis ½–1½ poll. longis; corolla ¾–1¼ poll. diam., pallide lutea, glabra, tubo subgloboso, limbo acute 5–fido sinubus dentiformibus; corona exteriore 5–loba, lobis bifidis intense atropurpureis, basi tuberculatis; coronæ interioris segmentis subulatis, conniventibus, purpureis.

Hab. Dry stony places near Hell Poort, Cawood's Hole, and other places in the vicinity of Grahamstown, *MacOwan* (No. 910), *Barkly* (No. 13). Queenstown district, *Mr. Boucker*, *Barkly* (No. 13 bis).

Glabrous in all parts, cæspitose. *Stems* 1–2½ in. high, 5–8 lines thick, pale glaucous-gr en, 4– rarely 5 -angled, angles acute, sharply toothed. *Cymes* several-flowered; pedicels ½–1½ in. long. *Calyx-lobes* lanceolate acuminate, 2–3 lines long. *Buds* acutely pointed, or obtuse. *Corolla* ¾–1¼ in. in diameter; tube subglobose, slightly constricted at the mouth; limb spreading, the deltoid acuminate or acute lobes a little recurving, convex at the base, due to the tooth-like base of the sinuses being much depressed, the margins with an inflexed acute edge, and the back of the lobes with a strongly raised mid-rib; outside smooth, pale yellow, tinged with purple where exposed to the sun; inside smooth, or papillate-rugulose on the limb, varying from pale lemon-yellow to a somewhat golden primrose-yellow quite spotless. *Outer corona* velvety purple-black, deeply 5-lobed; the lobes oblong, with a prominent tubercle at the base, bifid at the apex, with upturned teeth. *Segments of the inner corona* subulate, connivent, purple. Odour none.

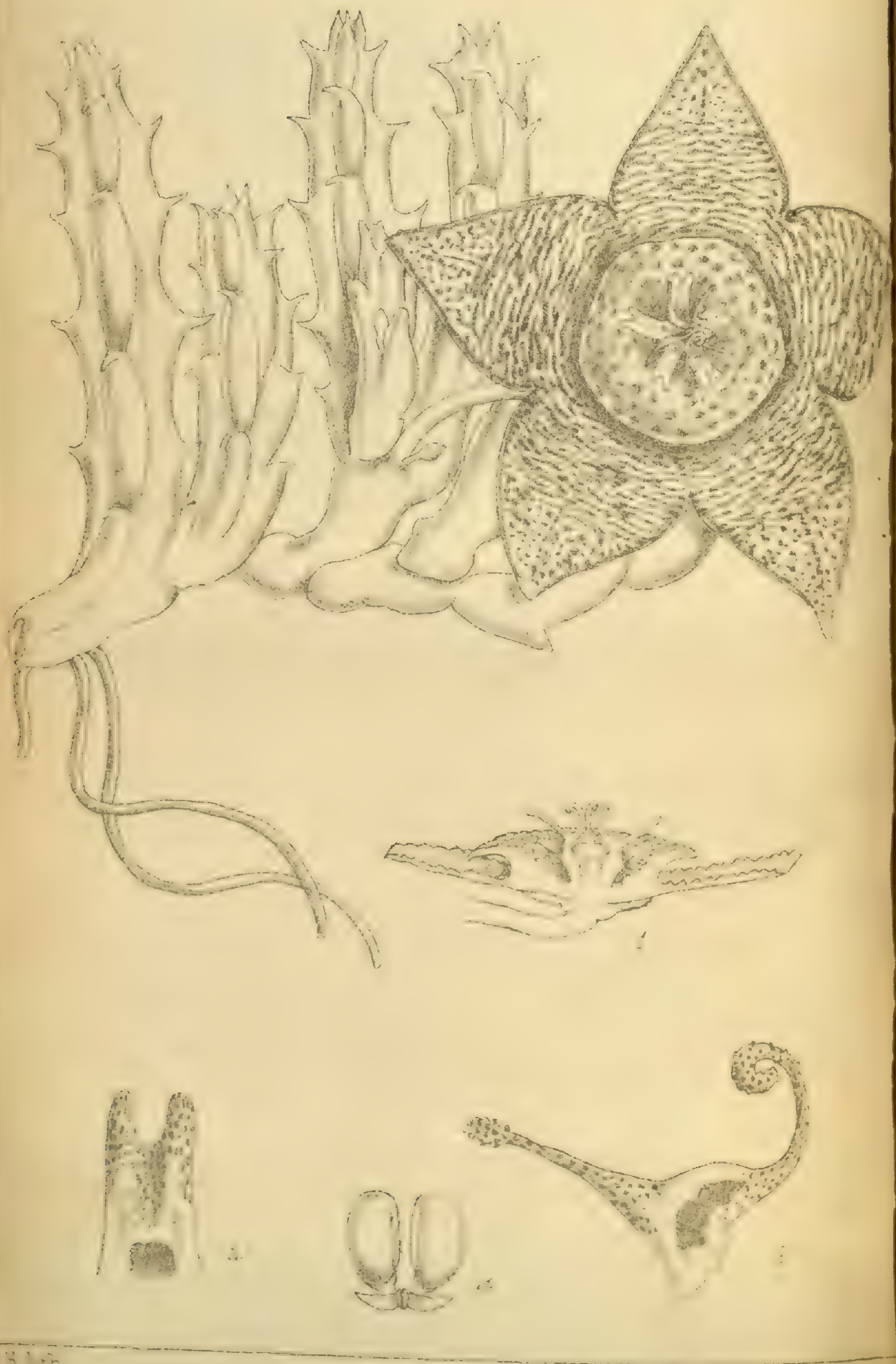
This well-marked species is very variable in the form of the buds, the acumination of the corolla lobes, and in the surface and colour. At first I was disposed to think that two closely allied species could be distinguished, but, having observed several living plants for several seasons, I find that the forms with obtuse and acute buds, respectively, exhibit all the variations of surface and colour in nearly the same degree, and there remains nothing but the shape of the buds, and consequent degree of acumination of the corolla lobes, to distinguish them; in all probability, if a more extensive series of plants than I

have had access to were examined, intermediate degrees of acumination of the bud and corolla lobes would be found.—N. E. Brown.

Figs. 1 and 2. Corona, front and side views. 3 and 4. Segment of the inner corona, with anther, front and side views. 5. Pollinia. 6. Flower, with rugulose corolla. *Figures* 1 to 5 *enlarged.*

H. reticulata, *Haw. Synop. Plant. Succ.* p. 28 (1812).—Stapelia reticulata, *Masson, Stap.* p. 9, t. 2 (1796); *Bot. Mag.* t. 1662; *Jacq. Stap.* t. 8 & 9.

Hab. Sir H. Barkly forwarded living plants of this to Kew, which were sent to him from the Clanwilliam district by Mr. Bishop, but unaccompanied by preserved specimens or drawing.—N. E. Brown.



Stapelia horizont[illegible]

Plate 1907.

STAPELIA HORIZONTALIS, *N. E. Br.*

Asclepiadaceæ. Tribe Stapelieæ.

S. horizontalis, *N. E. Br.* (*n. sp.*); ramis fere ut in S. variegata; pedicellis subsolitariis $1\frac{1}{2}$–$2\frac{1}{2}$ poll. longis; corolla $2\frac{1}{2}$–3 poll. diam., intus rugosissima, lobis ovatis acutis viridi-luteis apice maculatis basique transverse fuscopurpureo lineatis, annulo pentagono depresso-convexo, quam lobis pallidiore, fuscopurpureo maculato; coronæ exterioris segmentis oblongis, bifidis, pallide luteis apice fuscopurpureo punctatis basique macula quadrata fuscopurpurea notatis; coronæ interioris segmentis bipartitis, pallide luteis fuscopurpureo punctatis, parte exteriore subulata, apice subclavato fere horizontaliter patente, parte interiore erecta apice recurvo-clavato granuloso.

Hab.? *Barkly* (No. 4).

Very similar to *S. variegata* in the stems, but the angles a little more acutely toothed. *Pedicels* usually solitary, $1\frac{1}{2}$-$2\frac{1}{2}$ inches long. *Calyx-lobes* $2\frac{1}{2}$ lines long, broadly ovate, acute. *Corolla* $2\frac{1}{2}$ to 3 inches in diameter, the lobes broadly ovate, acute, flat or recurving, annulus pentagonal, flattish-convex; the whole of the face is very rugose, the lobes rather dull greenish-yellow, marked with small spots and often a central line on the apical half, irregular transverse lines on the basal half, and a series of contiguous spots around the margin, all of a dark purple-brown; annulus much paler, with numerous small round spots, and slender lines between the rugosities, of a dark purple-brown. *Segments of the outer corona* oblong, bifid to about $\frac{1}{3}$ the way down, lemon-yellow with some dots on the apical half, the central ones of which are continued down towards a quadrate spot at the base, of the same dark purple-brown, and there is a small, suffused, paler patch on each side of the central spots. *Segments of the inner corona* with two subulate arms, the outer arm almost horizontally spreading, slightly clavate, the inner arm erect, with a recurved, clavate, minutely tuberculate apex; the colour is lemon-yellow, dotted all over with purple-brown, and with a larger spot of the same colour on each side the shoulder at the base of the arms.

This is a very marked species, differing from all the others of this group by the peculiar flattened appearance of the annulus, and the nearly horizontally spreading (not ascending) outer arm of the inner coronal segments. It is difficult to describe the distinctive character

of the annulus in words, although easily recognised by the eye: the best indication I can give of it is that in the living flower it has a broader and flatter look, and a more finely rugose surface than in *S. variegata*. The only other described species with which it can be confused is *S. rugosa*, Jacq., in which the outer coronal segments are three-toothed at the apex, and the outer arms of the segments of the inner corona are erect, not horizontal as in this.—N. E. Brown.

Fig. 1. Section through the centre of the flower. 2. Segment of the outer corona, upper side. 3. Segment of the inner corona. 4. Pollinia. *Figures* 2 to 4 *enlarged*.

S. variegata, *Linn. Sp. Plant.* ed. 1, vol. 1, p. 217 (1753).—Orbea variegata, *Haw. Synop. Plant. Succ.* p. 40 (1812).

Hab. Lion Mountain, near Cape Town, *Barkly* (No. 3).

According to Sir H. Barkly, this is the only Stapelia found in the vicinity of Cape Town.

Var. **bufonia**, *N. E. Br.* —Stapelia bufonia, *Jacq. Stap.* t. 35 & 64, f. 5 (1806?); not of *Bot. Mag.* t. 1676. Orbea bufonia, *Haw. Synop. Plant. Succ.* p. 40 (1812).

Hab.? *Barkly* (Nos. 45, 60, & 61).

This appears to me only distinguishable from typical *S. variegata* by the darker colour of the flowers, the spots being larger and more crowded towards the centre; and by the segments of the outer corona having the lobes at their apex parallel, not spreading, and a little differently coloured. The plant figured by Jacquin on t. 36, as *S. bufoniæ varietas*, is no doubt only another form of this plant, but it is also, I believe, the same plant which was named *S. bisulca* by J. Donn.

Var. **pallida**, *N. E. Br.*; floribus pallidioribus, maculis minoribus.

Hab. Eastern Province. *Barkly* (No. 2).

Flowers paler, and the spots smaller than in typical *S. variegata*; the lobes of the outer corona are sometimes simply bifid, sometimes with a tooth at the base of the notch at the apex. This is probably only a local form of *S. variegata*, although the flowers have rather a different look, owing to their paler colour, but I cannot otherwise distinguish it. Sir Henry Barkly thus speaks of it:—'A curious pale yellow var. of the *S. variegata* group. It is scarcely distinguishable by any strongly marked specific character, but is much smaller, less patent, and its spurious orbicle is more distinctly pentagonal than in the *S. variegata* of Thunberg. It was given me at the Botanic Garden, Port Elizabeth, in 1872, and they only knew that it came from somewhere in the Eastern province. It is indeed the eastern representative of the Table Mountain *S. variegata*. I have seen specimens of the latter nearly as light in colour.'

This plant has been cultivated in England for many years.

Var. **Curtisii**, *N. E. Br.*—S. variegata, *Curtis, Bot. Mag.* t. 26.
S. Curtisii, *Roem. and Schult. Syst.* v. 6, p. 38 (1820).
Orbea Curtisii, *Haw. Synop. Plant. Succ.* p. 40 (1812).
O. inodora, *Haw. Suppl. Plant. Succ.* p. 12 (1819) ?

Hab. Near Simons Town. *Barkly* (57 and 57 bis).

In the 'Botanical Magazine' the segments of the outer corona are represented as entire, and are coloured green: the colour is undoubtedly an error; and, although the toothing at the apex is sometimes very imperfectly or unequally developed, yet they are never, so far as I have seen, as entire as represented in that plate. Lady Barkly's drawings show them to be emarginate or unequally bifid, and the specimens sent by Sir N. Barkly prove that, whilst there is considerable variation in the extent of their toothing, they are not quite entire. Besides the paler colour of the flower, the only character by which I can distinguish this variety from typical *S. variegata* is that the lobes of the outer corona are a little narrowed at the apex and less deeply bifid, whereas in the type they are as broad at the apex as at the base, or slightly broader from the spreading of the lobes.

After a study of many years' duration of the allied forms of that group of species of which *S. variegata* (on which the genus *Stapelia* was founded) is the type, I am unable to find any decided character, except colour, by which several of those which have been described as species can be specifically distinguished from each other. The stems of most of them are very much alike, and, with few exceptions, no character that can be expressed by words can be derived from them. The characters to be derived from the flowers are—1st, size; 2nd, form and general character of the annulus; 3rd, the outer corona; 4th, the inner corona. Of these in many cases the size of the corolla is of no use as a distinguishing character. The annulus is a very distinctive character to a certain extent, but varies somewhat in outline, from nearly circular to pentagonal, in different individuals of the same form. The coronal characters, I fear, are not very constant; so far as the notching at the apex of the outer coronal segments is concerned, little dependence can be placed upon it as a distinctive character: sometimes there is mere emargination, sometimes the apex is distinctly bifid, and sometimes more or less trifid, from the presence of a tooth at the base of the notch, in what I take to be slight varieties of the same species; and occasionally a similar amount of variation will occur in different years on flowers off the same plant. As an extreme case of variation in this respect, I may cite *S. namaquensis*, where the outer coronal segments in most forms are quite entire and acute, whilst in another form, unquestionably belonging to the same species, they are distinctly trifid at the apex! Of the inner coronal segments the characters I rely on for distinction are the presence and direction, or absence, of the outer arm, or *ala* of Jacquin; their length and coloration is certainly variable. The markings of the corolla alone I cannot regard as a specific character, for not only have I had plants produce differently marked flowers in different seasons, but I have made a drawing of one case in which two flowers from the same cyme were very differently coloured.

There seems, however, to be a distinctive character in the form of the buds, not in a young state, but when nearly full grown, which should always be noted.

On the above grounds I am inclined to refer several forms, hitherto considered as species, which only differ from each other in colour and slight differences of the outer corona, as varieties of a few species; for when preserved in spirits and the colour gone, or when preserved as herbarium specimens, unless very carefully dried and the markings retained, they cannot be specifically distinguished by any character that is invariable.—N. E. Brown.

S. picta, *J. Donn, Hort. Cantab.* ed. 3, p. 43 (1804), name only; *Bot. Mag.* t. 1169.—S. anguinea, *Jacq. Stap.* t. 37; [1] *Lodd. Bot. Cab.* t. 828. Orbea anguinea, *Haw.*, O. picta, *Haw.*, and O. Woodfordiana, *Haw.* (?), *Synop. Plant. Succ.* pp. 41–42 (1812).

Hab.? ***Barkly*** **(Nos. 23 and 59 ?).**

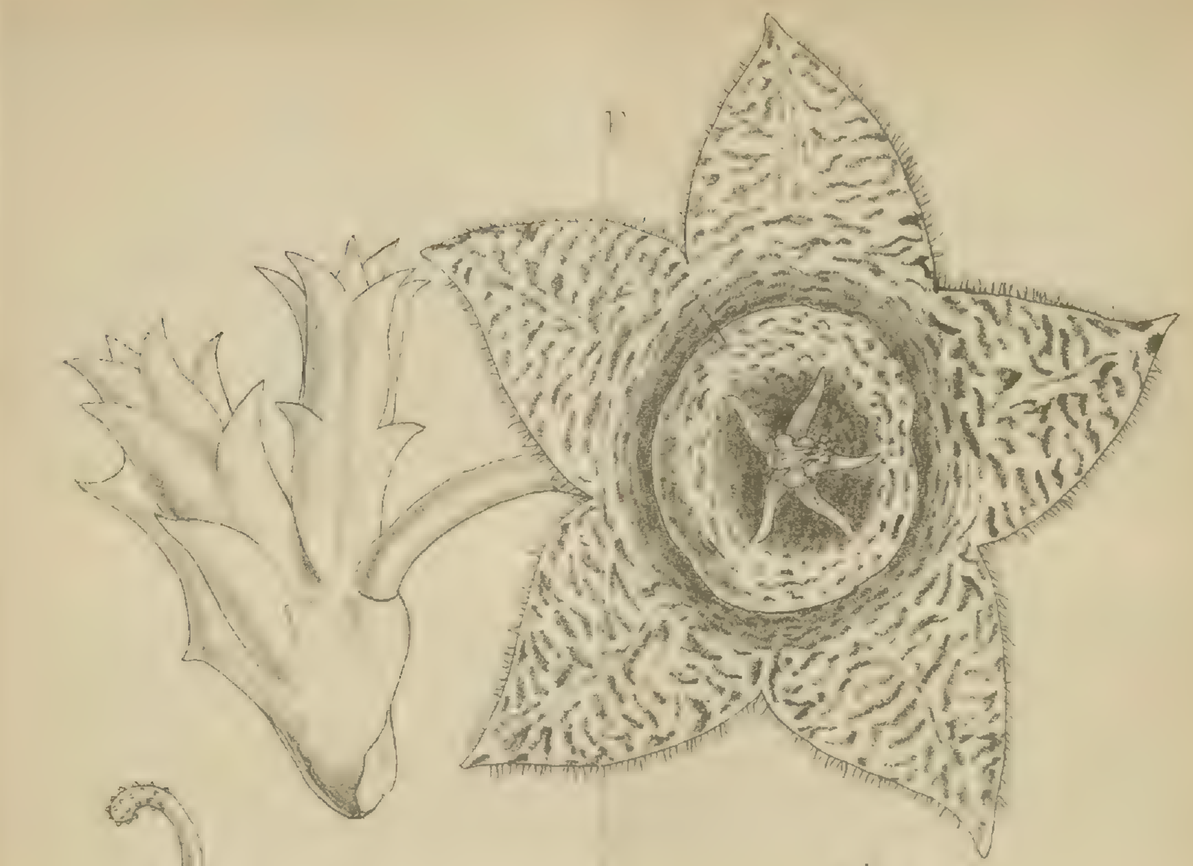
Sir Henry Barkly found this cultivated in the Botanic Garden at Cape Town; its native habitat is unknown. *O. Woodfordiana* is not described by Haworth, but I refer it here on account of a MS. note in a copy of the synopsis given by Haworth to Sir W. J. Hooker, which states that it is quite the same as *O. picta*, but it is not the plant cultivated as *O. Woodfordiana*, as known to me. The outer coronal segments are either bifid or 3-toothed at their apex, and vary in colour.

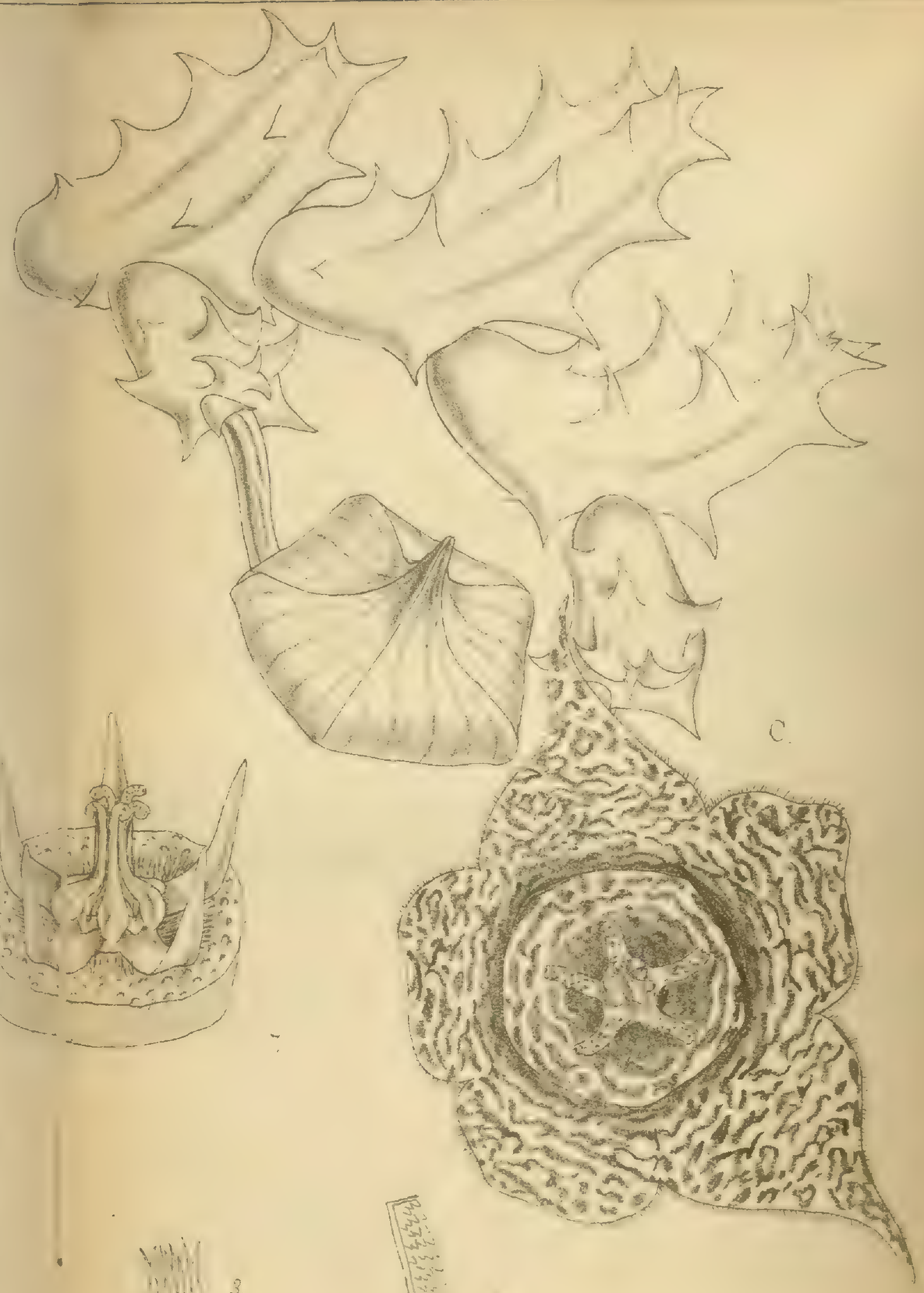
S. trisulca, *J. Donn, Hort. Cantab.* ed. 3, p. 43 (1804); *Jacq. Stap.* t. 33.

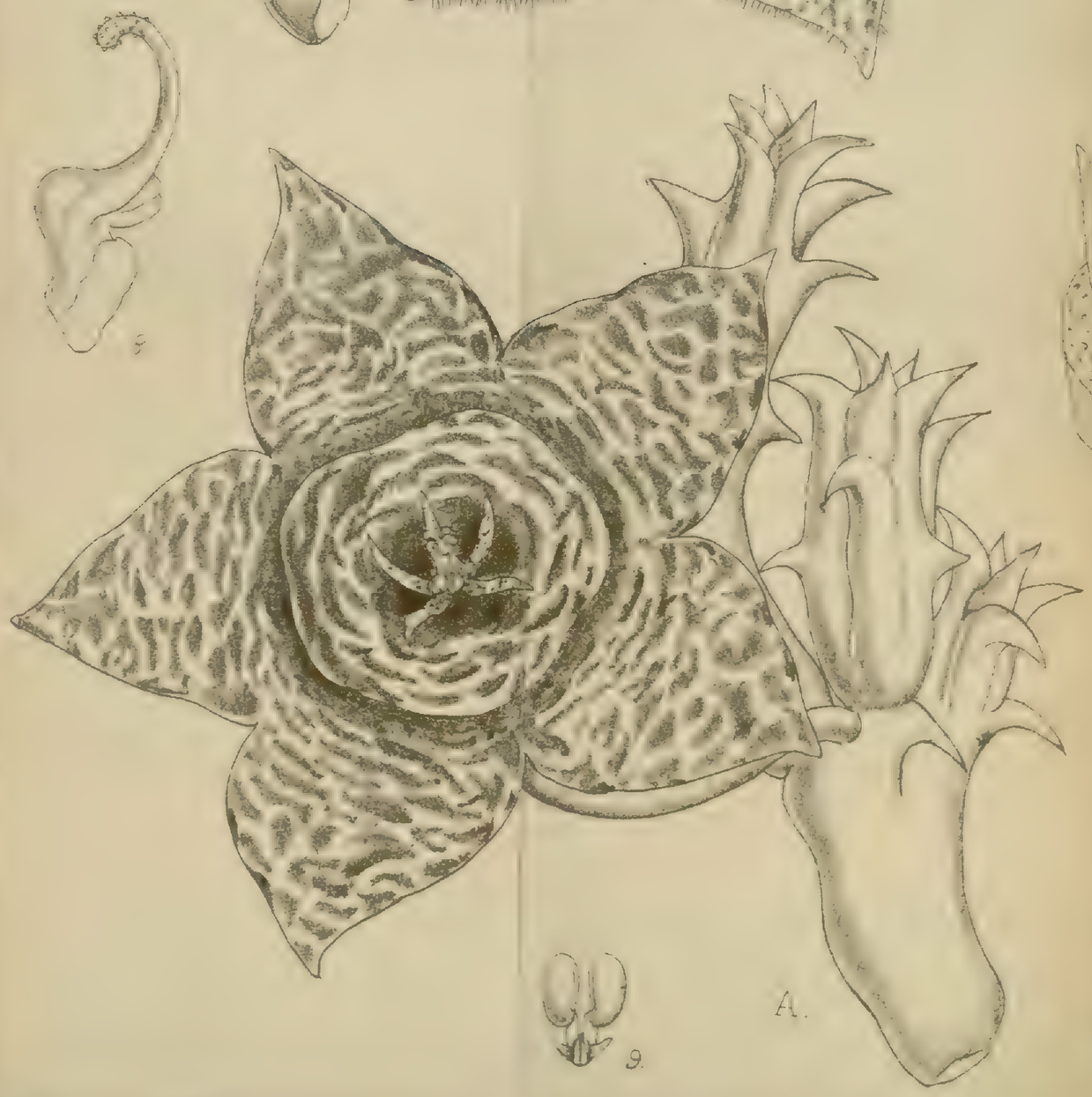
Hab. Breede River. *Barkly*, 'F. Bain.'

I refer this specimen to *S. trisulca* with some little doubt, as I have seen neither drawing nor buds of it, the form of the latter being the chief character that distinguishes it from some varieties of *S. variegata*, being flat in *S. trisulca* and pointed in *S. variegata*. The annulus and corona, however, very closely resemble those of *S. trisulca*, under which I at present place it.—N. E. Brown.

[1] Jacquin's work is dated 1806 on the title-page, but was issued in five parts, and the part containing this plate could not have been issued until 1812 or later, as Haworth's Synopsis is quoted for this plant.







M.S. lith.

Stapelia namaquensis, N.E. Br

Plate 1908.

STAPELIA NAMAQUENSIS, *N. E. Br.*

Asclepiadaceæ. Tribe Stapelieæ.

S. namaquensis, *N. E. Brown in Gard. Chron.* 1882, vol. 18, p. 648, including var. **minor**, *N. E. Br.*

Hab. Namaqualand, *Barkly* (Nos. 6, 64, and 64 bis).

Var. **ciliolata**, *N. E. Br. in Gard. Chron.* 1882, vol. 18, p. 648.

Hab. Namaqualand. *Barkly* (No. 38).

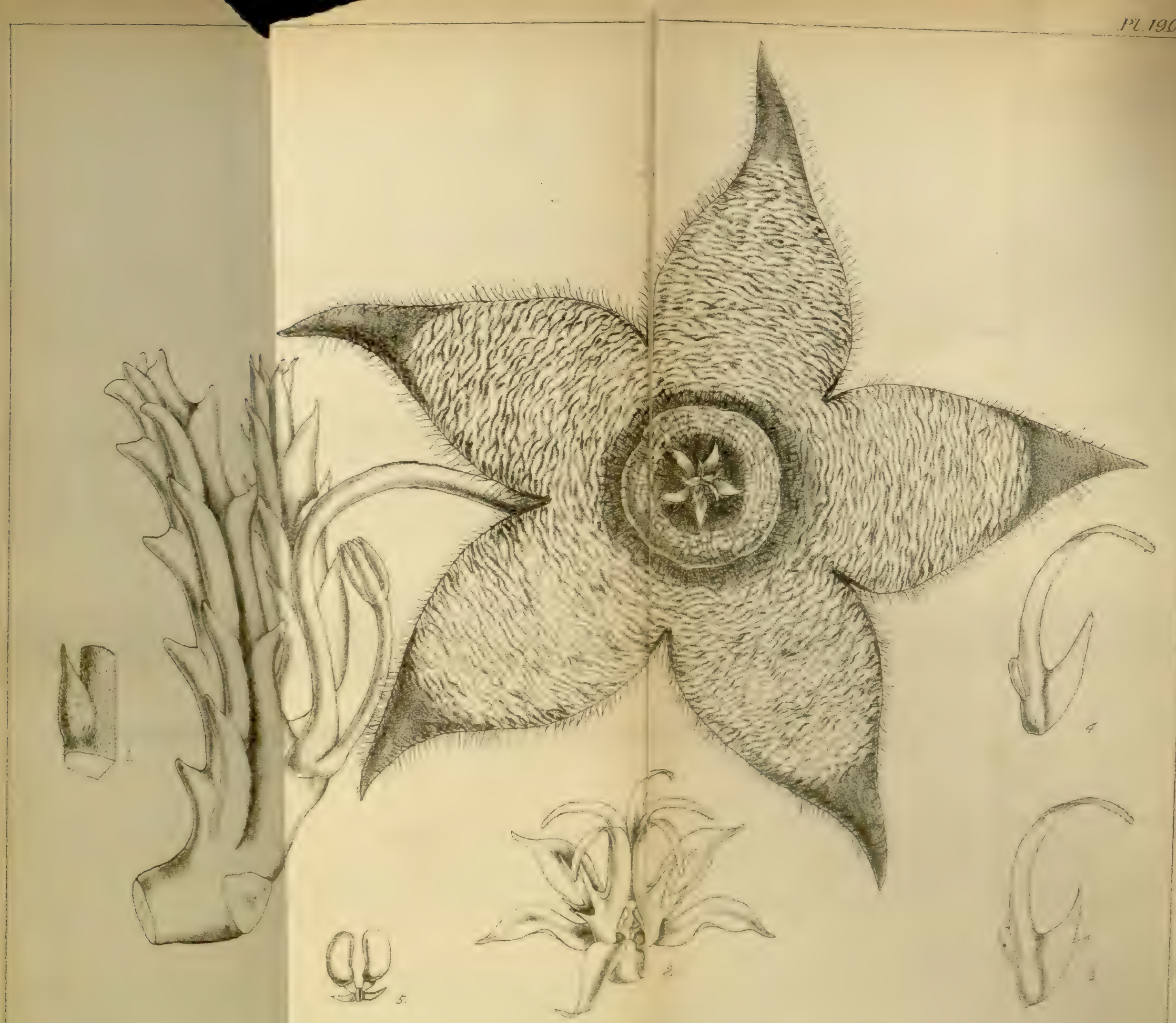
Var. **tridentata**, *N. E. Br. in Gard. Chron.* 1882, vol. 18, p. 648.

Hab. Namaqualand. *Rev. Mr. Morris* (No. 7), *Barkly*.

This species and its varieties are well distinguished from all other known species by the very thick solid-looking annulus, the margin of which is so strongly revolute as to be nearly circular in cross section, and by the absence of a dorsal horn or crest to the segments of the inner corona. Living plants of var. *tridentata* were sent to Kew by Sir H. Barkly, together with some dried flowers. but no drawing.

Sir H. Barkly also sent a drawing labelled 'No 18, Namaqualand,' which appears to me to represent, either a new species allied to *S. namaquensis*, or a very small-flowered form of that plant, but no specimen accompanied the drawing, which is not sufficiently accurate to describe from.—N. E. Brown.

A.—S. namaquensis, type. Fig. 7. Corona. 8. Segment of inner corona, with anther. 9. Pollinia. B.—Var. ciliolata. C.—Var. tridentata: 1. Section through annulus. 2. Papillate surface of corolla. 3. Hairs from around the corona. 4. Under, and 5. upper side of a segment of the outer corona. 6. Segment of inner corona, with anther. *Figures* 2 to 8 *enlarged*.



M S lith.

Stapelia Barklyi N. E. Br.

Plate 1909.

STAPELIA BARKLYI, *N. E. Br.*

Asclepiadaceæ. Tribe Stapelieæ.

S. Barklyi, *N. E. Brown* (*n. sp.*) ; ramis pluribus, crassis, puberulis, tetragonis, angulis valide dentatis; pedicellis 3–4 poll. longis, validis, minutissime puberulis; corolla magna, 5–6 poll. diam., lobis ovatis acutis, glabris, leviter rugosis, longe ciliatis, fusco-purpureis rugis transversalibus luteis, apice toto fuscopurpureo, disco et annulo solido villoso, annulo pallide fuscopurpureo luteo lineato ; coronæ exterioris segmentis lineari-oblongis, acuminatis, canaliculatis; coronæ interioris segmentis bipartitis, parte interiore subulata apice recurvo, parte exteriore alæformi deltoideo-acuminata, integra vel dentata.

Hab. Ookeep, Little Namaqualand, *Barkly* (No. 31).

Stems numerous, 3–4 in. high, branching at the base, stout, about $\frac{3}{4}$ inch in diameter, puberulous, 4-angled, the angles with stout spreading teeth. *Flowers* 1 to 2 together from the basal part of the stems: pedicels stout, 3–4 in. long, glabrous to the eye, but with a very minute and rather sparse pubescence as seen under a lens. *Calyx-lobes* lanceolate acute, $\frac{3}{8}$ inch long. *Corolla* 5–6 inches in diameter, glabrous outside; the lobes are ovate acute, $1\frac{3}{4}$–2 in. long, about $1\frac{1}{2}$ in. broad, glabrous, slightly rugose, ciliate with long purple hairs; annulus stout, solid, with 5 broad crenations formed by 5 shallow grooves radiating from the centre: the annulus and the disk around it is loosely villose with long purple hairs; the colour is dark purple-brown, marked with numerous pale yellow transverse lines, except at the apex of the lobes, which is entirely purple-brown; the annulus has a paler ground-colour with yellowish lines. *Segments of the outer corona* linear-oblong, acuminate, channelled down the face, yellow, dotted with purple-brown. *Segments of the inner corona* two-parted, purple-brown, inner part subulate, recurving from about the middle, outer part compressed, wing-like, narrow deltoid-acuminate, entire or toothed behind or at the apex.

This fine species completely connects the sections to which *S. variegata* and *S. grandiflora* respectively belong, having the annulus of the former group combined with the colour, ciliation, and coronal structure of the latter group; the stems are also intermediate between those two groups, having the stouter teeth of the *S. variegata* group combined

with the pubescence characteristic of the group to which *S. grandiflora* belongs. I believe this species to have originated by natural hybridisation between two members of these respective groups. It was discovered in Little Namaqualand by the Rev. Mr. Morris, who sent it to Sir H. Barkly.—N. E. Brown.

Fig. 1. Piece of stem, to show pubescence. 2. Corona. 3 and 4. Segments of inner corona, with anthers. 5. Pollinia. *All enlarged.*

Besides the above, Sir H. Barkly sent three others belonging to the section *Orbea*, respectively numbered 18, 69, and 76, which may, perhaps, be distinct species, but of No. 18 only a drawing was sent, and the other two seem to be so near to some of the others that, without a knowledge of them in the living state, I refrain from describing them.

S. pedunculata, *Masson*, *Stap.* p. 17, t. 21 (1796); *Jacq. Stap.* t. 60 to 63; *Bot. Mag.* t. 793.—Caruncularia pedunculata, *Haw. Synop. Plant. Succ.* p. 333. C. Sinsii, C. Massoni, C. Jacquini, and C. penduliflora, *Sweet*, *Hort. Brit.* ed. 2, pp. 358, 359 (1830).

Hab. Spectakal, Ookeep, and the neighbourhood of the Kamiesberg, Little Namaqualand; *Barkly* (Nos. 1 and 75).

The lobes of the corolla vary in colour from brownish to pale olive-green or yellowish-green. I believe the red-coloured lobes of the figure in the 'Botanical Magazine' t. 793 to be a misrepresentation. The outer coronal segments also vary, being usually emarginate, but sometimes acute with some tuberculation on each side just below the apex. I have had several plants of this in cultivation, no two of which were exactly alike, but none showed any tendency to have pendulous flowers as represented in the 'Botanical Magazine' and Jacquin, and I doubt if they are ever so in a natural state, though they might perhaps lie along the ground.—N. E. Brown.

M S lith.

A. Stapelia intermedia, N.E. Br.

B. ——— virescens, N.E. Br.

Plate 1910.

A.—STAPELIA INTERMEDIA, *N. E. Br.*
B.—STAPELIA VIRESCENS, *N. E. Br.*

Asclepiadaceæ. Tribe Stapelieæ.

A.—**S. intermedia**, *N. E. Br.* (*n. sp.*); ramis erectis 5-6 poll. longis, tetragonis, angulis grosse dentatis; pedicellis 1 poll. longis; corolla 1 poll. diam., plana, lobis ovato-deltoideis acutis, pilis clavatis ciliatis; coronæ exterioris segmentis tridentatis, dente medio ceteris multo majore, deltoideo, integro crenulato vel bifido; coronæ interioris segmentis ovato-attenuatis, arcte incumbentibus.

Hab. Olifants River, Clanwilliam district; *Barkly* (No. 8).

Stems erect, 5-6 inches high, 4-angled, the angles with stout spreading teeth. *Flowers* arising from along the grooves between the angles; pedicels about an inch long. *Calyx-lobes* broadly ovate-acuminate. *Corolla* an inch in diameter, nearly flat, without a tube, but slightly concave on the disk, the ovate-deltoid lobes ciliate, with vibratile, clavate, purple hairs,* otherwise glabrous, the face rugulose, green, spotted with purple-brown. *Segments of the outer corona* about as broad as long, three-toothed, the middle tooth deltoid, entire, slightly crenulate, or bifid, much longer and 3 to 4 times as broad as the linear side teeth. *Segments of the inner corona* ovate-attenuate, closely incumbent on the back of the anthers, not produced at the apex into erect points.

This plant was sent to Sir Henry Barkly by Mr. Reynolds of Namaqualand. I have only seen some dried flowers and a drawing of the plant made by Miss Barkly, from which latter I describe the stem and colour of the flowers. In its flower it is quite intermediate in character between the sections *Tridentea* and *Podanthes*, the corolla having quite the surface, colour, and ciliation of the former, whilst the corona is that of the section *Podanthes*, although the rather deeply 3-toothed outer coronal segments show some connection with the section *Tridentea*. Usually the segments of the outer corona are free to the base, but sometimes, though perhaps abnormally, they are connate up to the point of origin of the lateral teeth, forming an annular corona with 5 large teeth and 5 pairs of minute teeth alternating with them, when the corona is like that of *Caralluma*. The

* These hairs have been accidentally omitted in the plate. They are rather short, and have nearly all fallen off from the dried flowers.

stems too, according to Miss Barkly's drawing, are much more like those of a *Caralluma* than they are to any species of *Stapelia* known to me; so that this plant is altogether a very anomalous one.—N. E. Brown.

A.—S. intermedia. Figs. 1 and 2. Coronas from two different flowers. 3. Segment of outer corona from another flower. 4. Pollinia. *All enlarged.*

B.—**S. virescens**, *N. E. Br.* (*n. sp.*); ramis erectis, tetragonis, glabris, dentatis, dentibus folia parva subulata gerentibus; cymis paucifloris, pedicellis 1–1½ poll. longis, erectis; corolla ¾–1 poll. diam., flavo-virente, lobis ovatis acutis, intus rugoso-tuberculatis, marginibus replicatis; coronæ exterioris segmentis trifidis, lobo medio ceteris multo latiore et subduplolongiore, denticulato; coronæ interioris segmentis bipartitis, parte interiore subulata valde recurva, quam exteriore compressa anguste deltoidea subtriplo longiore.

Hab. 'Brought by *Mr. Dickson* from the Karoo, on the road to the Diamond Fields.' *Barkly* (No. 35). *Mrs. Barber*, without locality.

Stems erect, 2–3 in. high, glabrous, obtusely 4-angled, the angles toothed, teeth with subulate leaves ⅙–¼ in. long. *Cymes* several-flowered; pedicels 1–1½ in. long, erect, glabrous. *Calyx-lobes* lanceolate, acute. *Corolla* ¾-1 in. in diameter, deeply 5-lobed, and without a distinct tube, smooth, and of a whitish-green colour, shaded with pink on the back, strongly rugose-tuberculate, and of a light-green or yellowish-green on the face, quite glabrous; the margins of the lobes are strongly reflexed, and not ciliate. *Segments of the outer corona* yellow, trifid, with the middle lobe much the broadest, lanceolate or oblong, entire or denticulate at the apex, channelled down the face, and usually with an angle or slight tooth on each side at the base: the lateral lobes are subulate and about half as long as the middle lobe. *Segments of the inner corona* yellow, two-horned, outer horn compressed, narrowly deltoid, about one-third the length of the inner subulate recurved horn.

I have not seen this alive, and describe the colour from Lady Barkly's drawing. The scent is stated to be disgusting.—N. E. Brown.

B.—S. virescens. Fig. 5. Corona. 6 and 7. Two segments of outer corona. 8. Segment of inner corona, with anther. 9. Pollinia. *All enlarged.*

S. hircosa, *Jacq. Stap.* t. 25; *Willd. En. Pl. Hort. Berol.* p. 281 (1809).—S. moschata, *J. Donn* (?) *Hort. Cantab.* ed. 3, p. 43 (1804), name only; *Lodd. Bot. Cab.* t. 1051; Tridentea moschata, *Haw. Synop. Plant. Succ.* p. 35 (1812), name only.

Hab.? *Barkly* (No. 79).

Var. **densa**, *N. E. Br.*; corolla viridi-lutea, creberrime fusco-purpureo-punctata; coronis carneo-albis, vel interiore lutea, utrisque **fuscopurpureo-punctatis.**

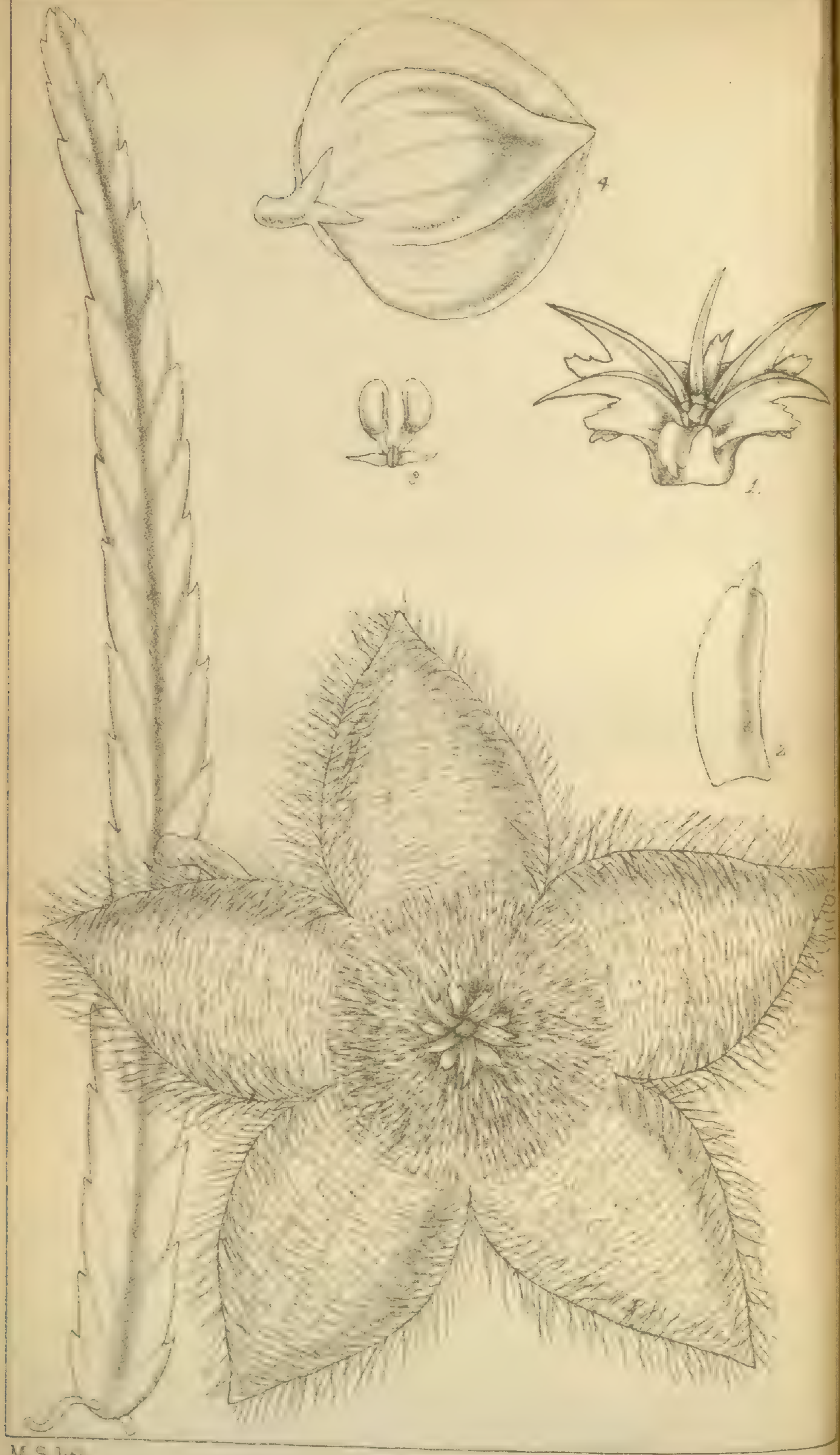
Hab. Between Murraysberg and Richmond, and Orange River. *Barkly* (No. 10), *MacOwan* (No. 2263).

The variety *densa* only differs from the type in the paler colour of the corona, the much smaller and more numerous spots on the corolla, and in having the middle lobe of the outer segments of the corona a little narrower and rather less angulate at the base, but this character seems variable in different individuals. I am inclined to believe that both these are local forms of *S. gemmiflora*. I retain Jacquin's name in preference to that of Donn, as neither Donn nor Haworth give a description of the plant, although the latter in his 'Supplementum Plant. Succ.' p. 10 refers *S. hircosa* as a synonym of *Tridentea moschata*, and gives a brief description, probably compiled from that of Jacquin. But, as there has always been much confusion of the names of the *Stapeliæ* in gardens, it by no means follows that Haworth's plant was certainly the same as that to which Donn had years before given the name of *S. moschata*.—**N. E. Brown.**

S. gemmiflora, *Masson*, *Stap.* p. 14, t. 15 (1796); *Jacq. Stap.* t. 24; *Bot. Mag.* t. 1839.

Hab. Sundays River, Zwartruggens, district of Graaff Reinet, *MacOwan* (No. 2243). *Barkly* (No. 48). Near Graaff Reinet, *Bolus* (No. 817). District of Albert, *Cooper* (No. 671).

This seems only distinguishable from *S. hircosa* by having the flowers of an uniform very dark purple-brown, not spotted as in that species.—**N. E. Brown.**



M.S. ltd.

Stapelia villosa, N.E.Br.

Plate 1911.

STAPELIA VILLOSA, *N. E. Br.*

Asclepiadaceæ. Tribe Stapelieæ.

S. villosa, *N. E. Br.* (*n. sp*); ramis iis S. hirsutæ similibus; alabastris globosis, sub apice sacculis 5 instructis; corolla 4–5 poll. diam., lobis ovato-lanceolatis reflexis, longe ciliatis, disco dense et longe villoso; coronæ exterioris segmentis lineari-oblongis concavis, apice recurvis obtusis, emarginatis, apiculatis; coronæ interioris segmentis inæqualiter bifidis, parte exteriore alæformi, subacuta integra vel denticulata, ad partem interiorem triquetrem recurvo-patentem usque medio adnata.

Hab. Namaqualand, *Barkly* (No. 28 bis).

Stems similar to those of *S. hirsuta*, 5–8 in. high. *Pedicels* stout, pubescent, 2–2½ in. long. *Buds* globose, shortly pointed, with five depressions below the point. *Corolla* 4–5 in. in diameter, with reflexed or revolute, ovate-lanceolate lobes, ciliate with long purple hairs, the disk and base of the lobes densely covered with long, soft, purple hairs; the back is pubescent, and the face transversely wrinkled on the lobes, purple-brown, marked with transverse yellowish lines on the basal part of the lobes. *Segments of the outer corona* linear-oblong, concave down the face, recurved at the apex, which is obtuse and emarginate with a prolonged central apiculus. *Segments of the inner corona* recurved-spreading, unequally bifid, the dorsal or outer part wing-like, bluntly pointed, entire or denticulate on the inner edge, adnate to the middle or beyond of the inner triquetrous part. 'Corona entirely of a blackish-brown.'

Allied to *S. pulvinata*, but the corolla-lobes are not so broad in proportion to their length, and not gibbous near their tips like those of *S. pulvinata*; the cushion of hairs on the disk is not so thick, nor the disk so broad; the outer coronal segments are not so narrow and less concave, the inner coronal segments are not so stout, and their dorsal wing is not adnate to so great an extent.—N. E. Brown.

Fig. 1. Corona. 2. Segment of outer corona. 3. Pollinia. 4. Bud. *Figures* 1 to 3 *enlarged.*

S. pulvinata, *Masson, Stap.* p. 13, t. 13 (1796); *Bot. Mag.* t. 1240; *Lodd. Bot. Cab.* t. 206; *Reichenb. Fl. Exot.* vol. 5, p. 11, t. 303.

Hab. Kamiesberg, Little Namaqualand, *Barkly* (No. 28).—N. E. Brown.

Stapelia affinis. N E Br.

Plate 1912.

STAPELIA AFFINIS, *N. E. Br.*

Asclepiadaceæ. Tribe Stapelieæ.

S. affinis, *N. E. Br.* (*n. sp.*) : S. hirsutæ similis, sed differt corollæ disco villosiori, et coronæ interioris segmentis distincte bipartitis, parte exteriore compressa, lineari-oblonga, subhorizontaliter patente, parte interiore robusta, triquetra, a basi supra exteriorem arcte reflexa.

Hab. ? *Barkly* (No. 16).

Stems and *corolla* similar to *S. hirsuta*, *Jacq. Stap.* t. 51, but the disk of the corolla is more densely villous, with long purple hairs, and the inner corona entirely different. *The segments of the inner corona* are distinctly bipartite to the base, and radiately spreading, not erect ; the outer part is flattened and wing-like, linear-oblong, a little tapering towards the apex, entire or nearly so, nearly horizontally spreading ; * the inner part is stout, triquetrous, and reflexed from the base closely over the outer part. The colour of the corolla is dark brown-purple with transverse cream-coloured lines on the basal half of the lobes, which are ciliate with long purple hairs.—N. E. Brown.

Fig. 1. Portion of stem to show pubescence. 2. Transverse section of stem. 3. Corona. 4. Segment of outer corona. 5 and 6. Segments of inner corona, with anthers. *Figure 2 natural size, the rest enlarged.*

*** They are represented too erect in the plate.**

M S lith.

Stapelia fuscopurpurea, N.E Br.

Plate 1913.

STAPELIA FUSCOPURPUREA, *N. E. Br.*

Asclepiadaceæ. Tribe Stapelieæ.

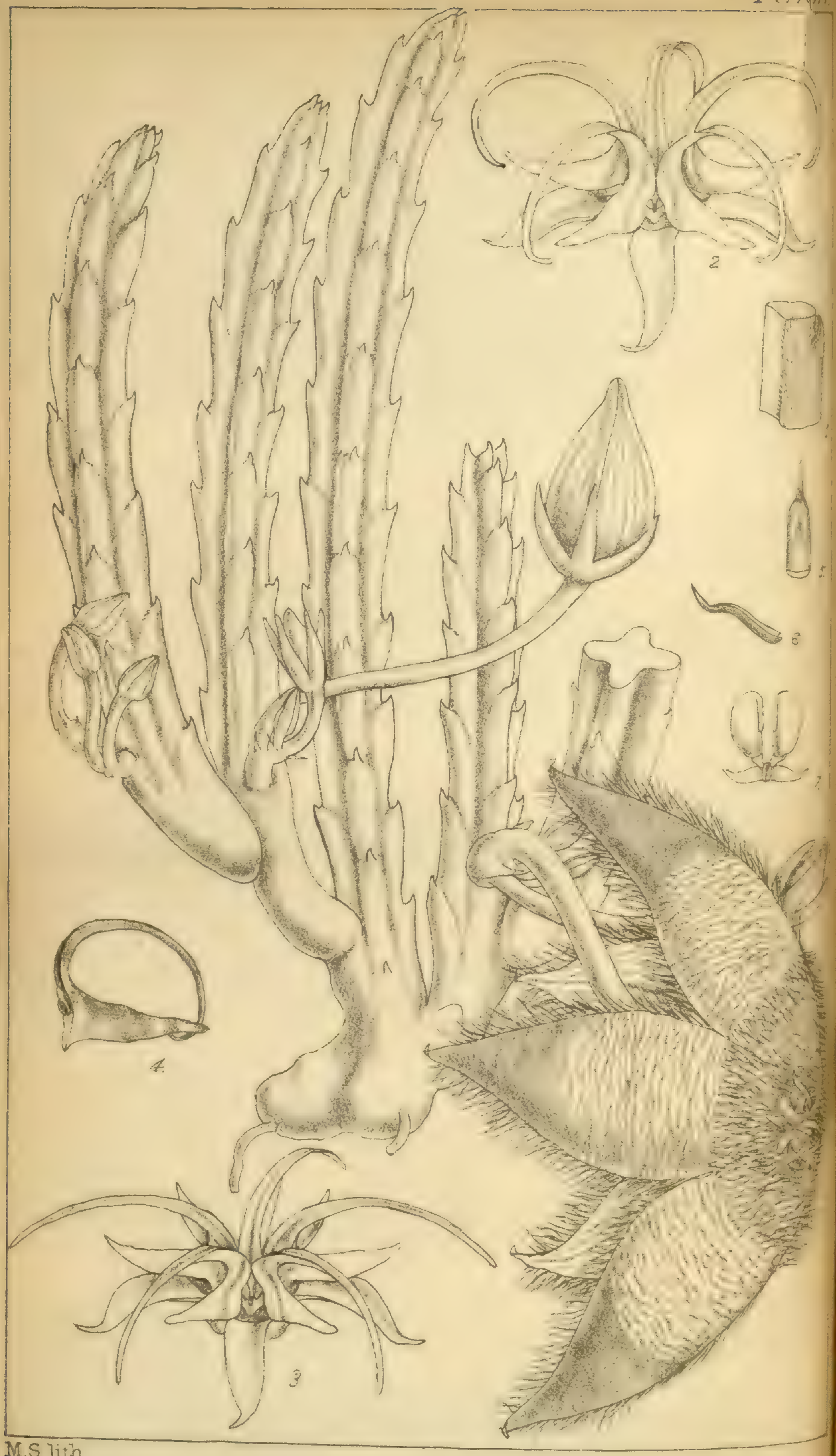
S. fuscopurpurea, *N. E. Br. (n. sp.)* ; ramis 6-8 poll. longis, erectis, puberulis, tetraquetris ; pedicellis $\frac{3}{4}$–1 poll. longis, puberulis ; corolla 3½–4 poll. diam., concolori, fuscopurpurea, lobis ovato-lanceolatis longe ciliatis, disco longe villoso ; coronæ exterioris segmentis anguste linearioblongis, canaliculatis, apice recurvo, obtuso, minute apiculato ; coronæ interioris segmentis erecto-patentibus, parte dorsali tota adnata, late alæformi truncata, apice denticulato, parte interiori longiori triquetra apice recurvo.

Hab. ? *Barkly* (No. 55).

Stems erect, an inch in diameter, downy, 4-angled, the angles compressed, dentate. *Pedicels* short, $\frac{3}{4}$–1 inch long, stout, pubescent. *Calyx-lobes* lanceolate acute. *Corolla* 3½–4 inches in diameter, puberulous on the back ; the face is of an uniform dark purple-brown, villous with long, soft, dark purple hairs on the disk, glabrous and slightly rugose on the ovate-lanceolate lobes, which are ciliate with long purple hairs, and more or less reflexed with revolute margins. *Outer coronal segments* ascending, narrow linear-oblong, obtuse with a minute apiculus at the recurved apex, channelled down the face, dark purple-brown. *Inner coronal segments* erect with recurved tips, with the dorsal or outer part broad and wing-like, truncate and denticulate at the apex, and entirely adnate to, and about one-third shorter than, the inner triquetrous recurved tip, dark purple-brown.

This is more nearly allied to *S. grandiflora* than to any of the other described species, but the flowers are very much smaller and the coronal structure different. I have not seen this species alive, in which condition the outer coronal segments may be more spreading, and their margins less inrolled, than in the only flower preserved in spirits of wine which I have seen.—N. E. Brown.

Fig. 1. Corona. 2 and 3. Segments of outer corona. 4. Pollinia. *All enlarged.*



M.S. lith.

Stapelia patula. Jacq. var. longirostris, N. E. Br.

Plate 1914.

STAPELIA PATULA, *Willd. var.* LONGIROSTRIS, *N. E. Br.*

Asclepiadaceæ. Tribe Stapelieæ.

S. patula, *Willd. Enum. Plant. Hort. Berol.* p. 281 (1809).—S. sororia, *Jacq. Stap.* t. 56 and 57, not of Masson.

Hab. Mitchell's Pass. *Barkly* (Nos. 36, 68, and 54 partly). *MacOwan* (No. 2244).

Var. **depressa**, *N. E. Br.*—S. depressa, *Jacq. Stap.* t. 55.

Hab. ? *Barkly* (No. 54, partly).

Var. **longirostris**, *N. E. Br.*; lobis calycinis corollæ sinubus extensis; coronæ interioris segmentis bipartitis, parte interiore longissime valde arcuata.

Hab. ? *Barkly* (No. 54 partly, and No. 56).

Calyx-lobes reaching nearly or quite to the sinuses of the corolla, often reflexed at their tips. *Segments of the outer corona* contracted at the apex into a rather long subulate point. *Segments of the inner corona* bipartite, the inner part twice as long as the narrow, spreading, outer part, and very strongly recurving from the base.

This plant appears to me one of considerable variability. Sir Henry Barkly collected at Mitchell's Pass, Hex River, and Darling Bridge a series of plants which are all alike, so far as their stems and the coloration of their flowers is concerned, but exhibit several differences in the form of the buds, the manner in which the corolla-lobes are reflexed, and in the coronal structure. Several plants are also in cultivation which bear a very close general resemblance to Sir H. Barkly's plants, but differ from them in the same varying characters, so as to form a large series that graduate into one another in such a way as to make it almost impossible to decide what characters should be taken as specific ones; and until we know more about the constancy of the above-mentioned characters, by raising a good series from seeds, I think it is unadvisable to distinguish the numerous variations by specific names, although some of them have been so distinguished. I should place in this series my *S. unguipetala*, published in the 'Gardeners' Chronicle' 1877, vol. 8, p. 334, f. 54; *S. comata*, Jacq. Stap. t. 49; and *S. depressa*, Jacq. Stap. t. 55; though whether they are

varieties or local races of one species, or really distinct species, must hereafter be decided by a fuller knowledge of them than we have at present. But, from the fact that Sir Henry Barkly obtained at least two forms from Mitchell's Pass, I incline to believe them to be varieties merely. The Darling Bridge and Hex River plants were not distinguished by Sir H. Barkly from some of the Mitchell's Pass plants by any separate number, all being sent as No. 54, so that in the varieties given above I am unable to say whether each was found in a distinct locality, or in two or more localities, and therefore merely quote the number, although I have reason to believe that some of the specimens, at least, of var. *longirostris*, came from Mitchell's Pass. The three localities—Darling Bridge, Mitchell's Pass, and Hex River—according to Sir H. Barkly, 'form a triangle, the base of which, between the two first, is about 20 miles long, and the other two sides about 40 miles.'

Besides the typical form of *S. patula*, Willd. (Jacq. Stap. t. 56), in which the outer coronal segments are entire and simply acute, Sir H. Barkly sent another form from Mitchell's Pass (No 36, partly, and No. 68) in which the outer coronal segments are tridentate at the apex, with the middle tooth longest.—N. E. Brown.

Fig. 1. Portion of stem to show pubescence. 2 and 3. Coronas from different flowers. 4. Segment of inner corona, with anther. 5 and 6. Segment of outer corona, front and side views. 7. Pollinia. *All enlarged.*

M.S. lith.

Stapelia Arnoti, N.E.Br.

Plate 1915.

STAPELIA ARNOTI, *N. E. Br.*

Asclepiadaceæ. Tribe Stapelieæ.

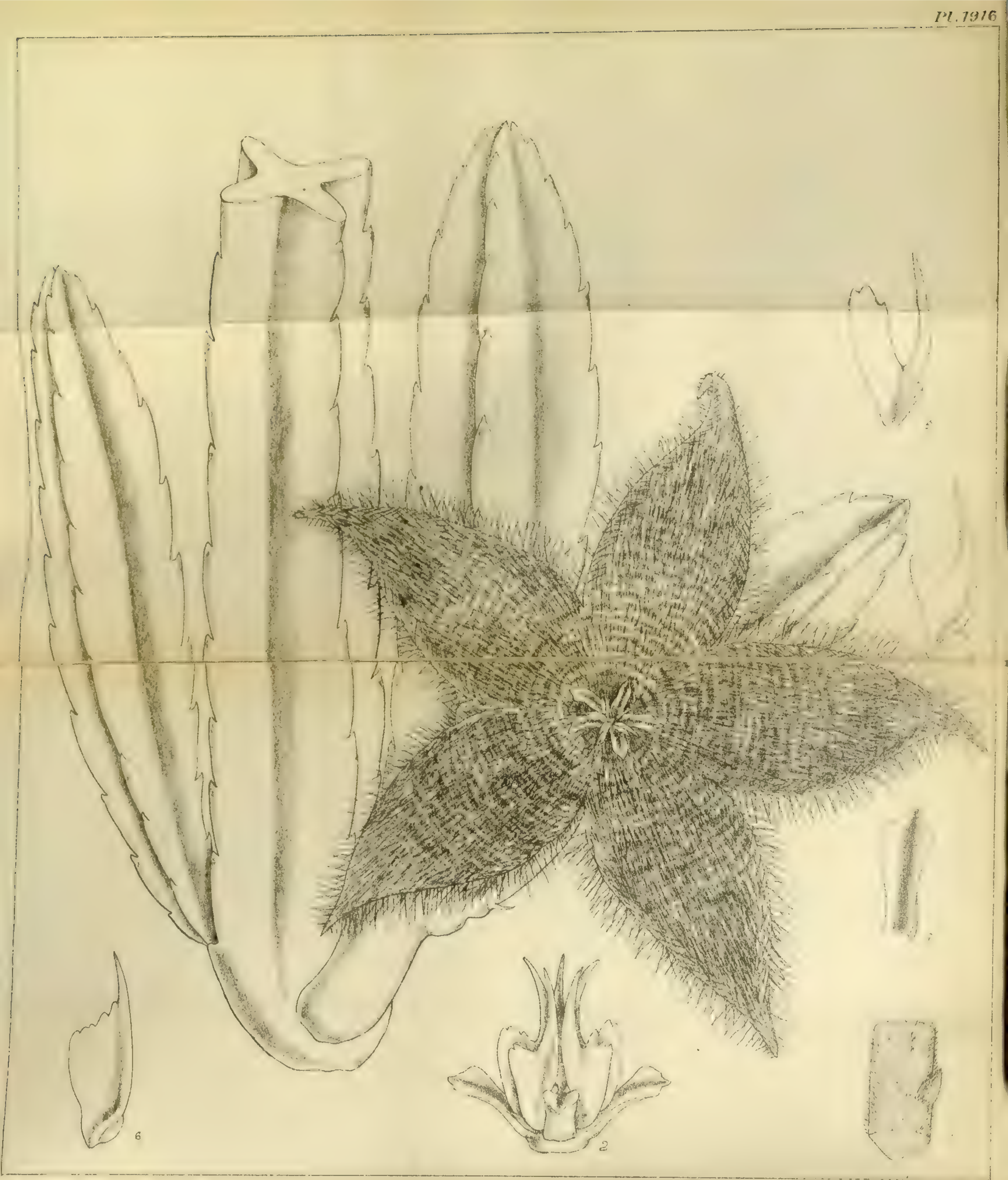
S. Arnoti, *N. E. Br.* (*n. sp.*) ; S. grandifloræ affinis sed minor, corollæ disco et parte inferiore loborum non rugoso longe hirsuto ; coronæ exterioris segmentis anguste lineari-oblongis, acutis, valde canaliculatis ; coronæ interioris segmentis inæqualiter bifidis, subpatulis, alæformibus, antice triquetris acutis.

Hab. Griqualand West, *Mr. Arnot*, *Barkly* (No. 70).

Stems erect, pubescent, 6–8 in. high, about an inch in diameter, 4-angled, angles compressed, dentate, with erect, ovate, rudimentary leaves. *Cymes* several-flowered ? the flowers often opening in pairs ; pedicels 1 in. long, stout, pubescent. *Calyx-lobes* about $\frac{1}{4}$ in. long, lanceolate, acute, pubescent. *Buds* very broadly ovate, obtuse, with a flattish-obconical base. *Corolla* $3\frac{1}{2}$–4 in. in diameter, with ovate, acute, flattish, revolute lobes, ciliate with long purple and white hairs ; the back pubescent ; the face with the disk and basal half of the lobes covered with long, erect, purple hairs, and in this part smooth, not rugose, bright vinous-purple, the apical part of the lobes glabrous, slightly rugose, blackish. *Segments of the outer corona* narrow, linear-oblong, acute, deeply channelled down the face, dark purple-brown, dull yellow at the base. *Segments of the inner corona* a little spreading, unequally bifid, the dorsal part broad and wing-like, acute or obtuse, adnate to the inner part, which is a little longer, and triquetrous, acute ; dark purple-brown.

Allied to *S. grandiflora*, Mass., but the stems are not so stout, the flowers are smaller, and are smooth on the disk and basal half of the lobes of the corolla, not deeply rugose as in that species. The cymes appear to be 2–3-flowered with several abortive buds, but whether more flowers are produced from the same cyme at another time I do not know, as I have not seen the plant alive.—N. E. Brown.

Fig. 1. Portion of stem to show pubescence. 2. Corona. 3 and 4. Segment of outer corona, front and side views. 5. Segment of inner corona, with anther. 6. Pollinia. ***All enlarged.***



M.S.lith.

Stapelia Desmetiana, N.E.Br.

Plate 1916.

STAPELIA DESMETIANA, *N. E. Br.*

S. Desmetiana, *N. E. Br. in Gard. Chron.* 1889, vol. 6, p. 684.

Hab. Little Fish River, and Espag's Drift, Great Fish River, Somerset East, *MacOwan* (Nos. 1923*b* and 2249); Stiloh, Oxkraal Mountains, *Baur* (No. 783). *Barkly* (No. 72).

This species is readily distinguished from the other described forms with stout stems and large flowers, by the lobes and disk of the corolla being equally covered with hairs, which are all somewhat adpressed, and point to the tips of the lobes; and by the purple stripe down the middle of the outer coronal segments. The segments of the inner corona are exceedingly variable in form, as is partly shown on the plate.—N. E. Brown.

Fig. 1. Portion of stem to show pubescence. 2. Corona. 3. Segment of outer corona. 4, 5, and 6. Segments of inner corona, with anthers, from different flowers.

S. grandiflora, *Mass.* **var. lineata,** *N E. Br. in Gard. Chron.* 1877, vol. 7, p. 558, f. 85.

Hab. Near Fish River, 2,000 ft. alt., Somerset East, *MacOwan* (No. 1197, partly); Colesberg, *Dr. Shaw*; Victoria West; and Leribe, Basutoland, *Rev. J. Buchanan. Barkly* (No. 21).

S. ambigua, *Masson, Stap.* p. 13, t. 12 (1796); *Jacq. Stap.* t. 53 and 54.

Hab. Neighbourhood of Victoria West, *Barkly* (No. 66).

Sir Henry Barkly's plant is a variety with transverse yellow lines on the lobes, but the colour of the flower as represented in Lady Barkly's drawing is darker, and more purple in the centre, than in the variety figured by Jacquin on t. 54 of his '*Stapelæ*.'—N. E. Brown.

M S lith.

Stapelia glabricaulis, N. E. Br.

Plate 1917.

STAPELIA GLABRICAULIS, *N. E. Br.*

Asclepiadaceæ. Tribe Stapelieæ.

S. glabricaulis, *N. E. Br.* (*n. sp.*) ; ramis adscendentibus basi decumbentibus, glabris, tetraquetris ; cymis plurifloris, pedicellis $1\frac{1}{4}$–$2\frac{1}{4}$ poll. longis glabris ; corolla $2\frac{1}{2}$–3 poll. diam., vinoso-purpurea, lobis ovato-oblongis acutis, margine revolutis, longe ciliatis, disco et basi loborum pilis purpureis villoso ; coronæ exterioris segmentis linearioblongis, acutis, canaliculatis ; coronæ interioris segmentis bipartitis vel profunde bifidis, parte exteriore alæformi, attenuato-oblonga vel anguste-deltoidea, acuta vel obtusa, quam parte interiore triquetra subulata valde recurva multo breviore.

Hab. Blinkwater, Kaffraria ; *Barkly* (No. 52). In edges of woods or under large bushes in shady localities, Keiskama River, Kaffraria ; King William's Town ; Lower Fish River, &c. *Mrs. Barber* (drawing No. 7 in Kew Herbarium).

Stems rather loosely branching, decumbent at the base, 4–8 inches long, quite glabrous, 4-angled, the angles rather compressed, dentate, with erect, glabrous, rudimentary leaves. *Cymes* progressively several-flowered ; pedicels $1\frac{1}{4}$–$2\frac{1}{4}$ inches long, glabrous. *Calyx-lobes* lanceolate acute, glabrous outside, but usually with a few hairs on their inner surface, and sometimes on the margins. *Buds* subglobose, with 5 depressions just below the obtusely-pointed apex. *Corolla* $2\frac{1}{2}$–3 inches in diameter, with ovate-oblong, acute, stellately spreading lobes, having revolute margins ciliate with long, light purple hairs, and the disk and basal part of the lobes rather densely villous with long, light purple hairs, that are more or less adpressed and directed towards the tips of the lobes ; the back is glabrous, the face vinous-purple, paler and somewhat ochreous in the centre. *Outer coronal segments* linear-oblong, acute or subobtuse at the recurved apex, channelled down the face, purple-brown down the centre, with dull ochraceous margins. *Inner coronal segments* unequally bipartite, dark purple-brown, the dorsal or outer part wing-like, ascending, narrow, tapering to an acute or obtuse point, and about $\frac{1}{3}$ shorter than the triquetrous-subulate, ascending and arching-recurved inner part. Pods 4–5 inches long, stout, glabrous.

This species has the habit of *S. deflexa*, but the stems are stouter, and the flowers very different and much more handsome. It flowers freely and abundantly under cultivation.—N. E. Brown.

Fig. 1. Corona. 2. Segment of outer corona. 3 and 4. Segments of inner corona with anthers. 5. Pollinia. *All enlarged.*

M. S. lith.

Stapelia tsomoensis, N.E. Br.

Plate 1918.

STAPELIA TSOMOENSIS, *N. E. Br.*

Asclepiadaceæ. Tribe Stapelieæ.

S. tsomoensis, *N. E. Br. in Gard. Chron.* 1882, vol. 18, p. 168.

Hab. Tsomo River, *Col. Bowker. Barkly* (Nos. 32 and 42).

The stems of this species are glabrous, with the rudimentary leaves minutely pubescent. The flowers are liver-coloured without transverse markings, or sometimes with a few of the transverse ridges on the glabrous part of the lobes of a pale yellowish or greenish colour.—N. E. Brown.

Fig. 1. Portion of stem, to show the pubescent rudimentary leaf. 2. Transverse section of stem. 3. Corona. 4. Segment of outer corona. 5 and 6. Segments of inner corona, with anthers. 7. Pollinia. *All, except fig.* 2, *enlarged.*

M & Ith.

Stapelia lucida D. C.

Plate 1919.

STAPELIA LUCIDA, *DC.*

ASCLEPIADACEÆ. Tribe STAPELIEÆ.

S. lucida, *DC. Cat. Hort. Monsp.* p. 148 (1813); *DC. Prod.* vol. 8, p. 652; *Roem. and Schultes Syst. Veg.* vol. 6, p. 15.

HAB. Eezeljagds Poort, district of George, *Barkly* (No. 22); *MacOwan* (No. 2242). Caledon Kloof, *Bain* (Nos. 5 and 6). Seven-weeks Poort, *Bain* (No. 9).

The flowers of this species are of an uniform purple-brown, and the glabrous surface of the slightly rugose lobes is very shining. The amount of hairs on the disk, around the corona, seems very variable: sometimes they are as shown in the plate; sometimes extending a little further, just on to the base of the lobes; and in other specimens almost confined to five lines of hairs radiating from the corona to the sinuses of the lobes; and they are always very fine and rather short.—N. E. BROWN.

Fig. 1. Transverse section of stem. 2. Portion of stem, to show pubescence. 3. Corona. 4 and 5. Segments of outer corona. 6 and 7. Segments of inner corona, with anthers. 8. Pollinia. *Figures* 2 to 8 *enlarged.*

Stapelia Macowani N E Br.

Plate 1920.

STAPELIA MACOWANI, *N. E. Br.*

Asclepiadaceæ. Tribe Stapelieæ.

S. Macowani, *N. E. Br.* (*n. sp.*); ramis erectis, 6-12 poll. longis, 1 poll. diam., pubescentibus, tetraquetris, angulis compressis, dentatis; cymis plurifloris, pedicellis $\frac{1}{2}$-$\frac{3}{4}$ poll. longis, crassis, pubescentibus; corolla 2-2$\frac{1}{2}$ poll. diam., tubo vel disco latissime et haud profunde infundibuliformi, quinque sulcis radiatis notato, lobis ovatis acutis subplanis, marginibus non ciliatis; extus pubescente, intus glabra, rugosa, virescenti-alba, pallide vinoso-purpurea transversim lineata; coronæ exterioris segmentis oblongis, obtusis, apiculatis, canaliculatis; coronæ interioris segmentis erectis, alæformibus, apice oblique truncato, breviter bifido, emarginato vel denticulato.

Hab. In the vicinity of Grahamstown, at Currie's Kloof, Hell Poort, Bothasberg, and Loot's Kloof, and the district of Somerset; *MacOwan* (No. 909), *Barkly* (No. 49).

Stems erect, pubescent, 6-12 in. high, 4 in. in diameter as measured across one side, 4-angled, the angles much compressed, dentate, with erect rudimentary leaves. *Cymes* several-flowered; pedicels $\frac{1}{2}$-$\frac{3}{4}$ in. long, lengthening in fruit to 1$\frac{1}{4}$ in., stout, pubescent. *Calyx-lobes* lanceolate acute, pubescent. *Buds* very obtuse, subglobose, cuneately narrowed to the base from just below the middle. *Corolla* 2-2$\frac{1}{2}$ inches in diameter, with the disk depressed into a very broad and very shallow, somewhat funnel-shaped tube, marked with five grooves radiating from the centre to the angles between the ovate, acute, flattish lobes, which are not ciliate; the back is pubescent, the face quite glabrous, transversely wrinkled, pale 'greenish white,' marked with pale vinous-purple transverse lines. *Outer coronal segments* oblong, obtuse with an apiculus, channelled down the face, purple-brown, with the base yellowish. *Inner coronal segments* erect, broad and wing-like, obliquely truncate and emarginate, or slightly bifid, or toothed at the apex, dark purple-brown. Pods 5-6 in. long, stout, pubescent.

A very distinct and well-marked species, unlike any other known to me. I have not seen it alive, and describe the colour partly from Prof. MacOwan's notes and partly from Lady Barkly's drawings; the ground-colour is described by MacOwan as greenish-white, but in his admirably dried specimens and Lady Barkly's drawing the colour

appears to me to be pale yellow with a slight greenish tinge. The odour, according to Sir N. Barkly, 'is by no means strong, resembling a slightly fermenting Stilton cheese.' Prof. MacOwan describes it as almost odourless.—N. E. Brown.

Fig. 1. Portion of stem, to show pubescence. 2. Corona. 3 and 4. Segments of outer corona. 5. Segment of inner corona, with anther. 6. Pollinia. *All enlarged.*

S. olivacea, *N. E. Br. in Gard. Chron.* 1875, vol. 3, pp. 136 and 137, f. 24; *Bot. Mag.* t. 6212.

Hab. Common throughout the Karoo; *Barkly* (No. 43).

I described the flowers of this plant as dark olive-green with brown rugosities, and all that I have seen from cultivated specimens are so; but Sir H. Barkly describes the colour as 'dirty yellow, covered with reddish-purple wrinkles,' and in a subsequent letter remarks that 'the only point I cannot reconcile with your description is the colour of the interior of the corolla: with me it is rufous-red; the name *olivacea* is certainly inapplicable to the plant out here.' From this it would appear that in this country the flowers do not assume their natural colour. This cannot be a case of variation from difference of origin, as the plants which I described from were sent by Dr. Shaw from Sir H. Barkly's collection.—N. E. Brown.

M S. lith.

Stapelia erectiflora, N. E. Br.

Plate 1921.

STAPELIA ERECTIFLORA, *N. E. Br.*

Asclepiadaceæ. Tribe Stapelieæ.

S. erectiflora, *N. E. Br. in Gard. Chron.* 1889, vol. 6, p. 650.

Hab. Karoo, 6 miles beyond the Cederberg Mountains, Clanwilliam District, *Mr. Bain*; *Barkly* (No. 80); *MacOwan* (No. 2251).

This is a remarkable species, very distinct from any other known to me. It flowers profusely all along the stems; and the long erect pedicels and small Turk's-cap-like flowers at once distinguish it. The corolla is purple, clothed with adpressed white hairs, so that it has a greyish-purple look; the lobes are curved back so closely that their margins meet one another, and the back of the corolla and calyx is entirely concealed.—**N. E. Brown.**

Fig. 1. Portion of stem, to show pubescence. 2 and 3. Back and oblique front views of flower. 4. Segment of outer corona. 5. Segment of inner corona, with anther. 6. Pollinia. *All, except fig. 2, enlarged.*

S. glandulifiora, *Masson, Stap.* p. 16, t. 19 (1796); *Jacq. Stap.* t. 21.—S. glandulifera, *Haw. Synop. Plant. Succ.* p. 21 (1812).

Hab. Clanwilliam district.

Only living specimens of this species were sent to Kew by Sir H. Barkly, which were collected in the Clanwilliam district by Mr. Bishop and Mr. Bain. It seems to be a variable species, both in colour and in the form of the outer coronal segments, the latter being either entire and somewhat pointed, or emarginate, or shortly bifid at the apex.—N. E. Brown.

Stapelia rufa, Mass

Plate 1922.

STAPELIA RUFA, *Mass.*

Asclepiadaceæ. Tribe Stapeliæ.

S. rufa, *Masson*, *Stap.* p. 16, t. 20 (1796); not of *Haworth.*

Hab. Karoo, near Groote Fontein. *Barkly* (No. 65).

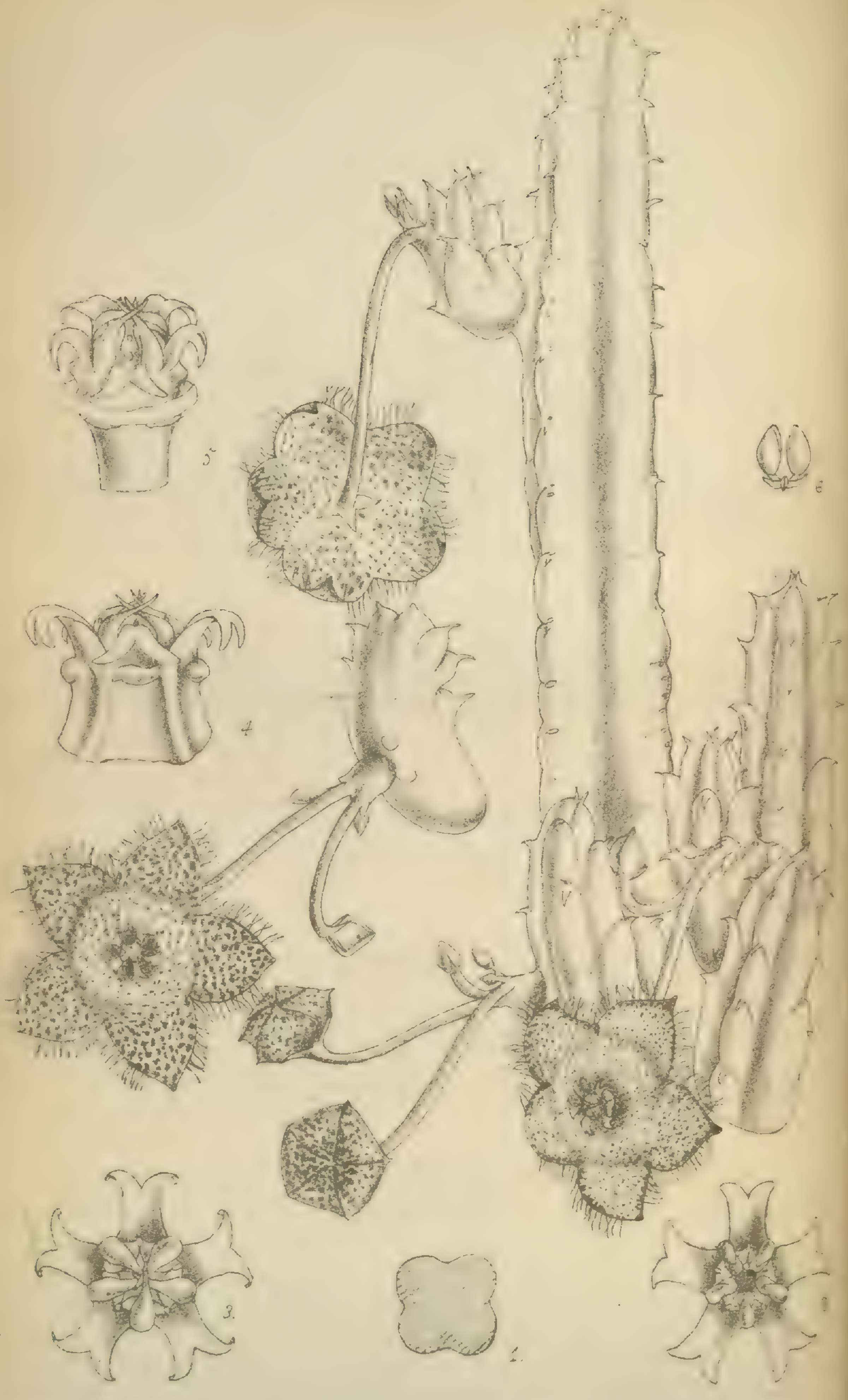
Fig. 1. Portion of stem, to show pubescence. 2. Transverse section of stem. 3 and 4. Corona, side and front views. 5. Segment of outer corona. 6. Segment of inner corona, with anther. 7. Pollinia. *All enlarged, except fig.* 2.

S. fissirostris, *Jacquin*, *Stap.* t. 23 (between 1809 and 1813).

Hab. Tomos Berg, Zwartberg Range, *Bain* (No. 3).

The notch at the apex of the segments of the inner corona varies considerably, as in some flowers the segments are distinctly bifid, as figured by Jacquin, in others merely emarginate at the apex.

A drawing of a plant belonging to this section was also sent by Sir H. Barkly, as No. 9, but no specimen accompanied it, and I am unable to determine the species from the drawing, but it may possibly be *S. rufescens*, Salm Dyck.—N. E. Brown.



M S lith

Stapelia parvipuncta. N.E.Br

Plate 1923.

STAPELIA PARVIPUNCTA, *N. E. Br.*

Asclepiadaceæ. Tribe Stapelieæ.

S. parvipuncta, *N. E. Br.* (*n. sp.*); ramis erectis, 2–5 poll. longis, tetragonis, dentatis, glabris; cymis gradatim plurifloris; pedicellis $\frac{3}{4}$–$1\frac{1}{2}$ poll. longis, patulis vel deflexis; corolla 1–$1\frac{1}{4}$ poll. diam., sulphurea, fusco-purpurea punctata, plana, annulo obsoleto, lobis recurvis, marginibus ciliatis, ciliis clavatis; coronæ exterioris segmentis oblongis, bifidis, recurvis; coronæ interioris segmentis ovatis, acutis vel subulato-acuminatis, incumbentibus.

Hab. Nieuwveld Mountains, *Mr. Bain.*

Stems erect, branching chiefly at the base, 2–5 inches high, $\frac{1}{2}$ inch or more thick, obtusely 4-angled, the angles obtusely toothed, with rudimentary subulate leaves, glabrous, dull green. *Cymes* from about the middle of the young shoots, progressively many-flowered; pedicels $\frac{3}{4}$–$1\frac{1}{2}$ inches long, glabrous. *Calyx-lobes* lanceolate, acute or acuminate. *Buds* pentagonal, flat. *Corolla* 1–$1\frac{1}{4}$ inches in diam., flat, with recurving, ovate, acute lobes, ciliate for $\frac{3}{4}$ their length with clavate purple hairs; the back of the corolla is glabrous, pale green, thickly spotted with purple-brown; the face is glabrous and slightly rugulose, the disk is flat without an annulus, the colour varies from very pale sulphur-white to pale greenish-yellow, and is entirely covered with spots of dark purple-brown, which are either all minute and dust-like, or the spots on the lobes are much larger; the lobes are sometimes margined with purple-brown. Both forms are represented in the plate. *Outer coronal segments* subrectangular, more or less recurving, bifid at the apex with diverging lobes, dark purple-brown, shining. *Inner coronal segments* simple, ovate acute, or subulate-acuminate, incumbent on the back of the anthers, purple-brown.

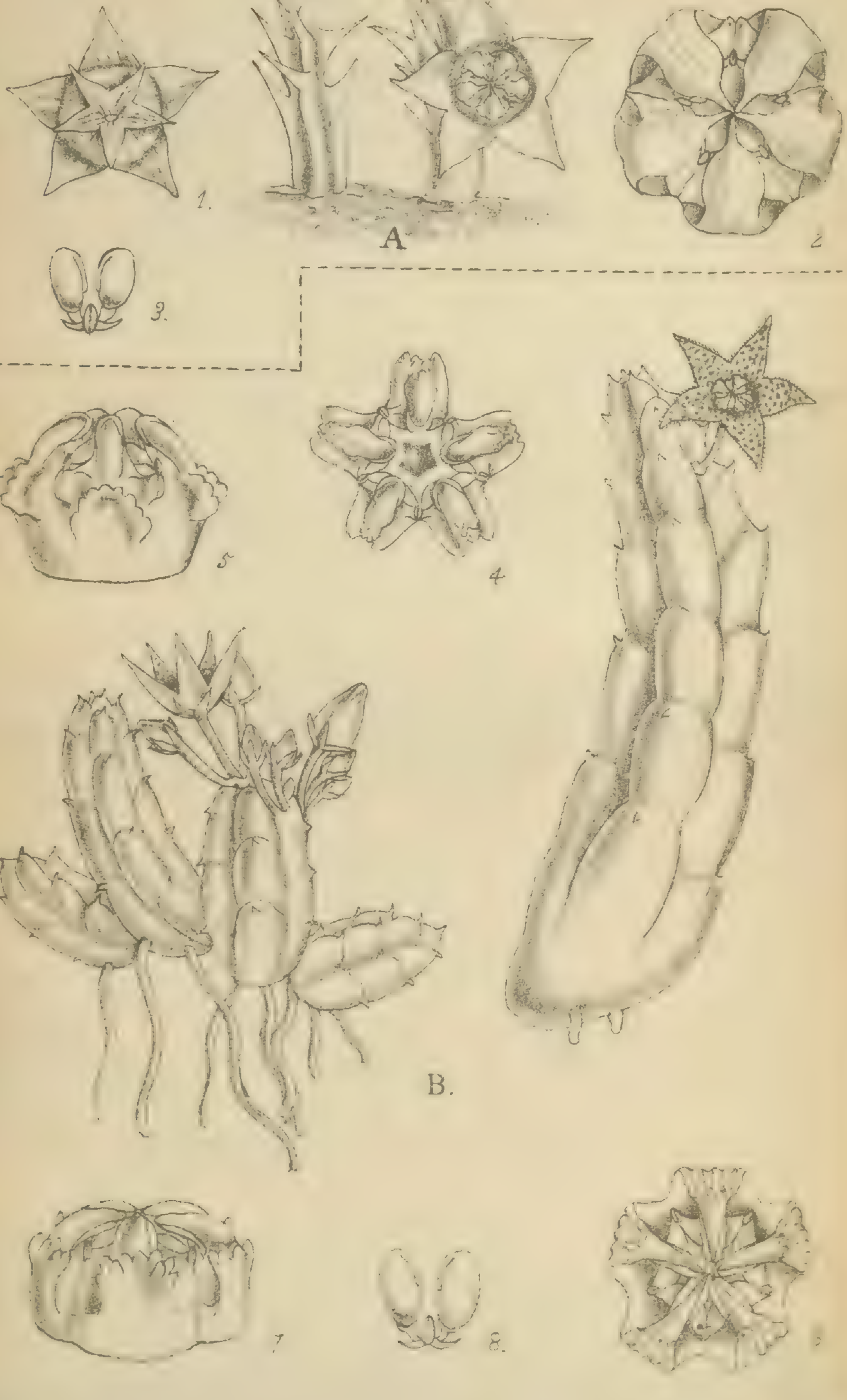
This was received from Sir H. Barkly marked 'Y. Bain'; living plants were also sent, which flowered with me in 1878. I place it and *S. tridens* in the section *Podanthes* on account of the coronal structure being the same, though otherwise they bear little resemblance to the species previously placed in this section. There is no distinct

annulus, the disk being flat, with the very faintest possible trace of an annular convexity around the outside of the corona.—N. E. Brown.

Fig. 1. Section of stem. 2–5. Coronas from different flowers, front and side views. 6. Pollinia. *Figures* 2 to 6 *enlarged.*

S. verrucosa, *Masson*, *Stap.* p. 11, t. 8 (1796); *Jacq. Stap.* t. 18; *Bot. Mag.* t. 786.—S. irrorata, *Lodd. Bot. Cab.* t. 127, not of *Masson.* Podanthes verrucosa, *Haw.*, and P. pulchra, *Haw.*, var. β, *Haw. Synop. Plant. Succ.* p. 33 (1812).

Hab. Near Graaff Reinet, 2,500 ft. alt., *Bolus* (No. 716); near Somerset East, *MacOwan* (No. 2177); Albany, *Cooper* (No. 1534); *Barkly* (No. 20) (from Griqualand West, *Mr. Arnot*, and Hell Poort, near Grahamstown, *MacOwan*); *Barkly* (No. 24) (from Kaffraria, *Bowker*).



M S lith.

A. Piaranthus grivanus, N.E.Br.
B. ———— comptus, N.E.Br.

Plate 1924.

A.—PIARANTHUS GRIVANUS, *N. E. Br.*
B.—PIARANTHUS COMPTUS, *N. E. Br.*

Asclepiadaceæ. Tribe Stapelieæ.

A.—**P. grivanus**, *N. E. Br.* (*n. sp.*); ramis 1–2 poll. longis, tuberculato-angulatis, tuberculis subspinosis; pedicellis brevissimis; corolla 1 poll. diam., tubo brevissimo, lobis deltoideo-ovatis patentibus, glabris, atropurpureis; lobis coronæ ovatis acutis, postice tuberculo parvo instructis, fusco-purpureis.

Hab. Griva, Griqualand West, *Mr. Arnot*, *Barkly* (No. 11).

Stems 1 to 2 inches long, 'forking in all directions,' tuberculate-angular, the tubercles tipped 'with a white spine' (the indurated or withered leaf). *Pedicels* very short. *Calyx-lobes* ovate-acuminate, $\frac{1}{4}$ inch long, glabrous. *Corolla* an inch in diameter, with a very short tube, and spreading, deltoid-ovate, acute lobes, glabrous and green with darker nerves outside, glabrous, rugose, and blackish-purple inside, the lobes not ciliate. *Segments of the corona* ovate-oblong acute, a little longer than the anthers, with a small tubercle behind (omitted in the plate), brownish-purple.

I have only seen a flower of this plant, the rest of the description being compiled from a drawing and description sent by Sir H. Barkly. It appears to be a very distinct and remarkable species.—N. E. Brown.

A.—P. grivanus. Fig. 1. Back view of flower. 2. Corona. 3. Pollinia. *Figures* 2 and 3 *enlarged.*

B.—**P. comptus**, *N. E. Br.* (*n. sp.*); ramis brevibus, obesis, cæspitosis, obtuse tetragonis, dentatis, glabris; pedicellis 3-6 lin. longis, glabris; corolla subrotata, 8-9 lin. diam., intus pubescente, albida, fusco-purpurea maculata; segmentis coronæ arcte incumbentibus, apice acutis, obtusis, vel denticulatis, prope basin crista quadrata horizontaliter patente postice denticulatis, luteis, fuscopurpureo punctatis.

Hab. Karoo, at Groote Fontein, *Mr. Dickson*, *Barkly* (Nos. 58 and 71).

Stems densely cæspitose, short, stout, obtusely 4-angled, usually

about an inch long, but sometimes growing to a length of 2–3 inches. *Flowers* 1–4 (usually 2) together, from near the middle or towards the tips of the stems; pedicels erect, 3–6 lines long, glabrous. *Calyx-lobes* lanceolate acuminate, $1\frac{1}{2}$ line long, glabrous. *Buds* ovate acuminate. *Corolla* subrotate, 8–9 lines in expanse; outside glabrous, dull greenish-brown; inside whitish, marked all over with small, dark purple-brown spots, and covered with a pubescence of white and purple hairs; the lobes are $3\frac{1}{2}$ lines long, lanceolate acuminate, very slightly convex, the margins being very little recurved. *Coronal lobes* closely incumbent on the back of the anthers, and not prolonged beyond them, yellow, dotted with purple-brown, acute, obtuse, or denticulate at apex, expanding near their base into a quadrate and truncate, or somewhat ovate, denticulate dorsal crest.

This species seems to vary considerably in the size of its stems and in the form of the corona, but a series of flowers show that the coronal differences fade into one another. Two extreme forms are represented on the plate: that with the large stem and figs. 4–5 is from the specimen sent by Sir H. Barkly, as No. 58, the rest of the plate being drawn from his No. 71. But a portion of the plant, No. 58, which Sir H. Barkly sent to Kew, has not produced stems under cultivation larger than those of the smaller plant (No. 71), as represented on the plate.
N. E. Brown.

B.—P. comptus. Figs. 4–7. Coronas from different plants, front and side views. 8. Pollinia. *All enlarged.*

P. decorus, *N. E. Br.?* —Stapelia decora, *Masson?*, *Stap.* p. 19, t. 26 (1796). Obesia decora, *Haw.? Synop. Plant. Succ.* p. 43 (1812).

Hab. Little Namaqualand, *Barkly* (No. 25); Victoria West, *Barkly* (No. 25 bis); Karoo, at Groote Fontein, *Barkly* (No. 73)?

I believe these are the same as Masson's plant, but do not feel quite certain about them.

2

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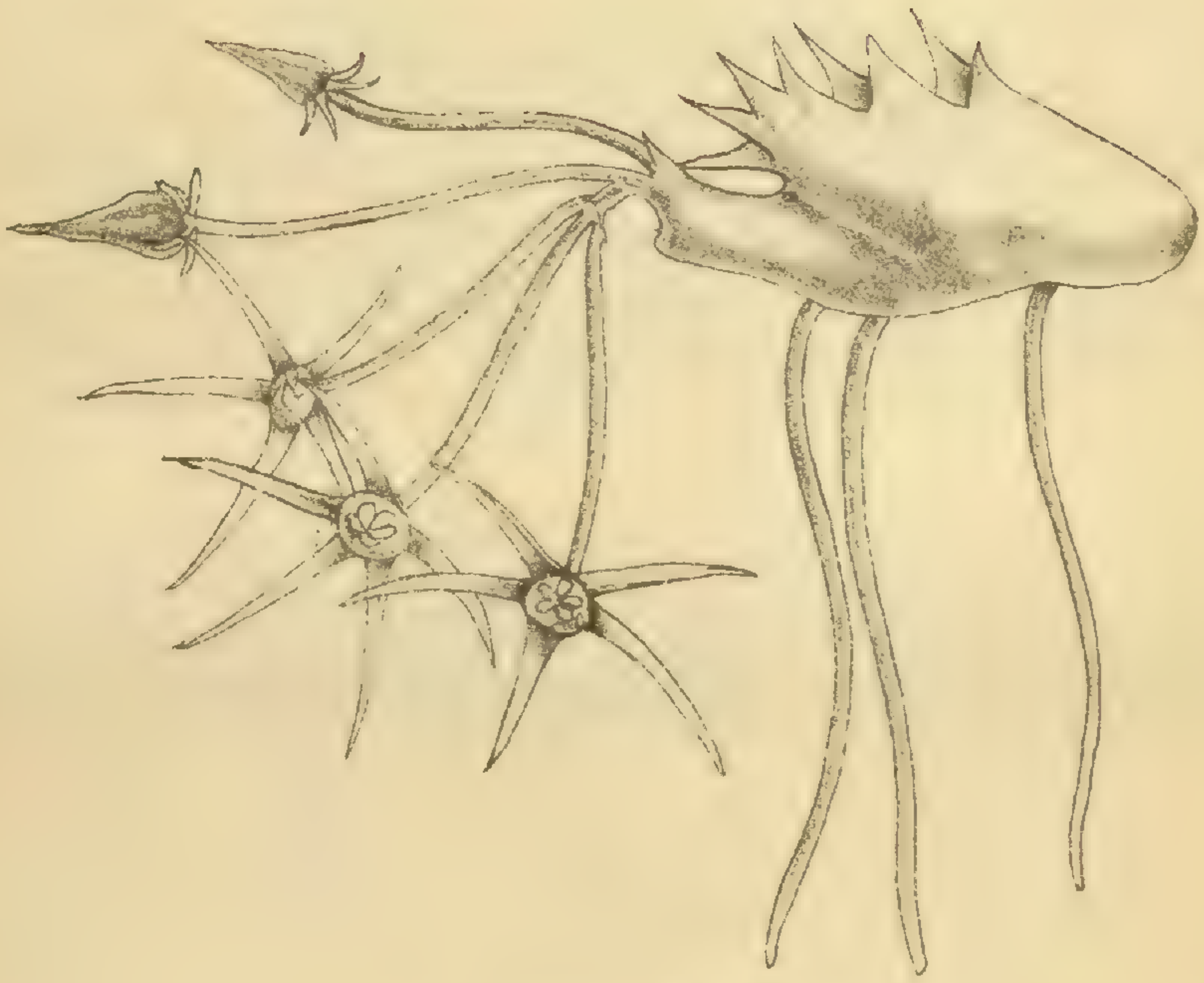

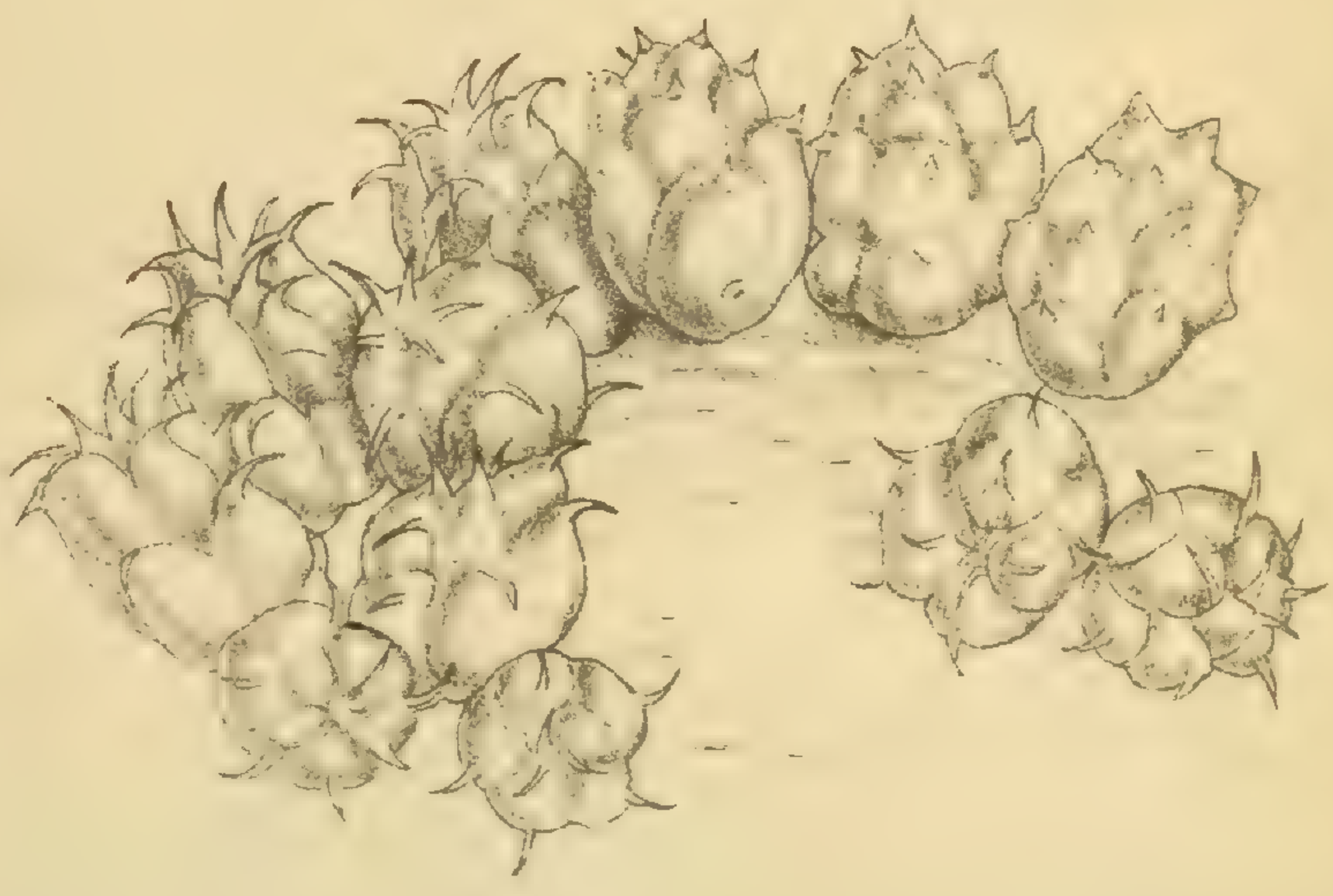

M. S. del.

Duvalia angustiloba N.E.Br.

Plate 1925.

DUVALIA ANGUSTILOBA, *N. E. Br.*

Asclepiadaceæ. Tribe Stapeliæ.

D. angustiloba, *N. E. Br. in Gard. Chron.* 1883, vol. 20, p. 230.

Hab. Brought from the Karoo on the way to the Diamond Fields by *Mr. Dickson, Barkly* (No. 33).

The flowers of this species are dark purple-brown with a white corona, and are produced in great profusion. In the centre of the plate is a flowering branch, sent home in spirits by Sir H. Barkly, below which is shown part of a plant as it grows under cultivation.—N. E. Brown.

Fig. 1. Flower from living plant, natural size. 2. Corona, *enlarged*.

D. hirtella, *Sweet, Hort. Brit.* p. 276 (1827).—Stapelia hirtella, *Jacq. Stap.* t. 10; S. reclinata, *Bot. Mag.* t. 1397, not of *Masson*.

Hab. Cultivated in the Botanic Garden, Cape Town, origin unknown, *Barkly* (No. 12).

Jacquin represents most of the stems on his plate as acutely quadrangular. This I believe to be quite incorrect: the plant as I know it has broadly rounded tuberculate angles, as in all the other species of the genus. Some four or five joints of the stem on Jacquin's plate are, however, more correctly represented with rounded angles; the stems on the plate in question, as on several other plates in Jacquin's work, are represented as being much more elongated than they are usually found, either in a wild state or under cultivation, but I believe this due to some difference in the method of cultivation, as I have had the same individual make much longer branches some years than others, and in *Ducallia hirtella* itself, although under cultivation with me the normal length of the shoots is from 1 to 1½ in., yet during one season they grew 2½ to 3 in. long, and I think that was owing to the amount of water supplied to them that year being more than they usually receive.—N. E. Brown.

D. reclinata, *Haw. Synop. Plant. Succ.* p. 44 (1812).—Stapelia reclinata, *Masson, Stap.* p. 19, t. 28; *Jacq. Stap.* t. 14.

Hab. Karoo, *Barkly* (Nos. 51, 53, and 67); Somerset East, *MacOwan* (No. 2232); stony hills near Graaff Reinet, 2,600 ft., *Bolus* (No. 54).

Notwithstanding that both Masson and Jacquin figure *S. reclinata* with very elongated stems, I believe both figures represent abnormal conditions of the plant: both were made from cultivated specimens, which were perhaps grown in a rich soil and very freely watered. The flowers are identical with those of the plant commonly cultivated, with clavate hairs on the corolla lobes, but I have never seen the branches more than $2\frac{1}{2}$ in. long, and usually they are only from 1–$1\frac{1}{2}$ in. long. This species is chiefly distinguished from *D. hirtella* by the clavate hairs fringing the corolla lobes; in *D. hirtella* the hairs are not clavate, and not so vibratile as in *D. reclinata*.—N. E. Brown.

D. elegans, *Haw. Synop. Plant. Succ.* p. 44 (1812).—Stapelia elegans, *Masson, Stap.* p. 19, t. 27 (1796); *Bot. Mag.* t 1184.

Hab. Little Namaqualand, *Barkly* (No. 34).

There are two forms of this plant: that figured by Masson, in which the annulus is very prominent, and the lobes of the corolla replicate almost to their base; and that figured in the 'Botanical Magazine,' in which the annulus is very much less prominent, being only a little elevated, and the lobes of the corolla sometimes replicate at the apical part only, the margins being reflexed-spreading at the basal part, and sometimes replicate nearly to the base Sir H. Barkly sent both forms, and I have had them both in cultivation, but whether they are varieties of the plant, in the ordinary sense of the word, or sexual conditions, I do not know; I believe both forms grow together.—N. E. Brown.

D. Corderoyi, *N. E. Br. in Bot. Mag.* sub t. 6245 (1876). Stapelia Corderoyi, *Hook. f. in Bot. Mag.* t. 6082 (1874).

A living plant of this was sent by Sir H. Barkly, labelled as collected by Mr. Bain, but without locality or number, and no specimens, either dried or in spirits, were sent. There is a specimen in the Kew Herbarium labelled 'Orange River, December.'

This plant varies in the colour of its flowers; some plants of it have the corolla of an olive-green colour, in others it is of a dull purple colour, the hairs on the annulus being bright purple in both. That this is a mere colour variation, and not a specific difference, is proved by the fact that I had flowers of both colours produced upon the same plant in September, 1877, a drawing of which, together with the dried flowers, is now placed in the Kew Herbarium. My plant, which produced these differently coloured flowers, was raised from a cutting of Mr. Corderoy's original plant. The buds as represented in the 'Botanical Magazine' are not correct, neither are the corolla-lobes tipped with red as shown in that plate.—N. E. Brown.

STAPELIÆ BARKLYANÆ.

By N. E. Brown.

During the greater part of the time that Sir Henry Barkly, G.C.M.G., was Governor of the Cape of Good Hope, namely, from 1873 to 1877, he used every effort to collect together, from various districts of South Africa, as many species of the tribe *Stapelieæ* as he could possibly procure, and cultivated them at the Government House, Cape Town. As they flowered, drawings of them were made by Lady Barkly and Miss E. B. Barkly, and copies of the drawings were sent to Kew by Sir Henry Barkly, together with specimens preserved in alcohol, accompanied by excellent descriptions from the living plants. Besides this, he generously sent to Kew living plants of all the kinds he had obtained; and, although several of these perished during the journey, the majority arrived safely, and many of them are in cultivation at the present time. The result has been that a very extensive series of these plants has been got together in the Kew Herbarium, consisting of the specimens and drawings sent by Sir H. Barkly, and specimens and drawings subsequently obtained from the living plants which he sent to England, and from plants in cultivation received from other sources.

I have been for many years collecting material for a monograph of this group; but, as circumstances render it unlikely that I can proceed with the work and bring it to an issue for some years to come, it has been thought advisable that the very important collection made by Sir Henry Barkly should be treated of separately; therefore, in the following pages will be found an enumeration of all those collected by him of which there is sufficient material for determination, with descriptions of the new species. There were several others of which stems or follicles were sent, some of them undoubtedly new species, but, as there are no flowers, I have not mentioned them in this paper. The plates which accompany the descriptions have been executed by Miss Smith, and are partly drawn from Sir Henry Barkly's specimens, partly adapted from the drawings which he sent, and partly copied from my own drawings of the living plants sent by Sir Henry Barkly.

Our knowledge of this remarkable group of plants has grown slowly; in the works of Linnæus and Linnæus fil., up to the date 1781, only five species are enumerated; Thunberg in 1794 enumerates eight species in his 'Prodromus,' one of which does not belong to the tribe, but is a *Brachystelma*; next comes Masson, who in 1796 published his 'Stapeliæ Novæ,' containing 41 species, 37 of which were previously

undescribed. In 1806 Jacquin commenced his 'Stapeliarum in hortis Vindobonensibus cultarum descriptiones figuris coloratis illustratæ,' in which many new species are published; the work appears to have been completed about 1819. Meanwhile Haworth, in 1812, published the 'Synopsis Plantarum Succulentum,' in which several new species are described. Up to the year preceding—viz., 1811—all the members of the tribe had been placed under the one genus *Stapelia*; in that year, however, Robert Brown, in his paper on the Asclepiadaceæ, divided them into the four genera *Stapelia*, *Huernia*, *Piaranthus*, and *Caralluma*; and Haworth in his 'Synopsis,' and the 'Supplementum' published in 1819, further divides them up into the genera *Gonostemon*, *Podanthes*, *Tridentea*, *Tromotriche*, *Orbea*, *Obesia*, *Duvalia*, *Pectinaria*, and *Caruncularia*, in addition to those proposed by Robert Brown. From that period until the present time no one appears to have paid much attention to them; several odd species have been described in different works, and several more genera made; numerous compiled descriptions of the species have appeared in the various Systemas, Catalogues, Dictionaries, &c., the most comprehensive being that by Decaisne in volume 8 of De Candolle's 'Prodromus,' published in 1844. Finally, in Bentham and Hooker's 'Genera Plantarum,' the genera are dealt with as a whole and redescribed; most of those proposed by Haworth being reduced both by Decaisne and Bentham and Hooker to the rank of sections of *Stapelia*.

Some twenty years ago, when I commenced to study this group and to cultivate them, the great difference in habit, and in the shape and structure of the flowers of different kinds, certainly seemed to me to warrant their generic separation as proposed by Haworth. But as my knowledge of them has increased, chiefly by means of the splendid collection sent by Sir Henry Barkly, so have I found that the characters which seemed so distinctive of one genus or group, when only comparatively few species were known to me, gradually merged into and became blended with the characters of another group, and that with another group, and so on, as I became acquainted with other forms. And now after a study of many years—during which a very large number of specimens, amounting to some hundreds, living, dried, and preserved in alcohol, have passed through my hands—I am quite unable to find any definite limiting characters for some of the genera here retained. The genera have been chiefly founded upon the structure of the corona, shape of the corolla, and habit of the plant. Habit, we know, is often a fallacious character, as, for example, in *Veronica* we have annual and perennial herbs, and evergreen shrubs; in *Oxalis* and *Pelargonium*, annuals, bulbs, and shrubs; in *Euphorbia*, leafy herbs and shrubs, and leafless succulents of very diverse habit; and among *Stapeliæ* habit appears of no more generic importance than in the genera named. It is true that a similarity of habit prevails among many of the species having the same floral structure, and so forming a distinctive group, but such habit is not invariably limited to those species; for instance, the stems of the plants which belong to the group called *Gonostemon* by Haworth are exactly imitated among those to which he restricted the generic name *Stapelia*: the stems of

Diplocyatha are very like those of *Stapelia namaquensis*: and those of the plant figured by Masson as *Stapelia aperta* have exactly the same general appearance as those of *S. pedunculata*; but the corolla has a distinct campanulate tube, and the structure of the corona is that of *Caralluma*, so that they cannot both be placed together in the same group; and the stems of *Piaranthus* and *Huerniopsis* resemble those of *Duvalia*. It is evident, then, that no definite generic character is to be found in the stems. The corolla varies considerably among the different members of the same genus; in *Stapelia* itself it is usually flat and rotate, but some species have a saucer-shaped or shortly campanulate tube, without any alteration in the general coronal structure. With regard to the coronal structure, that appears to me to be so indefinitely variable that it cannot, when taken alone, be implicitly relied upon for generic distinction. To give a few instances: in the plant I originally described as *Quaqua hottentotorum* I have seen specimens, living and in alcohol, in which a distinct outer corona was present, and others in which it was quite absent, or so rudimentary as to appear so! Yet the plants were otherwise identical, and certainly belong to but one species, and not to two genera as would be the case if the coronal character only were taken into consideration. An undescribed species of *Trichocaulon* has the stems and flowers very similar to those of *T. piliferum*, but a corona like that of *Hoodia*. *Stapelia intermedia*, described at pl. 1910A, offers another case of variation in the same species; in floral structure it appears to be quite intermediate between the sections *Tridentea* and *Podanthes* of the genus *Stapelia*: the three-toothed segments of the outer corona are usually free to the base, as in the typical Stapelias, but sometimes they are connate, or adnate to the sides of the segments of the inner corona, up to the point of origin of the lateral teeth, so as to form an annular corona with five large teeth, and five pairs of minute teeth alternating with them (see pl. 1910A, f. 2), thus resembling the corona of certain species of *Caralluma*, in which genus such a coronal structure would place it, whilst the other form of corona places it in *Stapelia*. It would be easy to give other instances, but these will suffice to show that, except in a few of the genera, no character, or in some instances even no set of characters, can be relied upon as definitely separating the genera. They all seem to blend and intermingle in a manner that in many cases defies classification.

I believe this intermingling of characters has been brought about in this way: the *Asclepiadaceæ* all require the agency of insects to bring about fertilisation; and two species growing within a moderate distance of each other would become very liable to be cross-fertilised with each other's pollen, and hybrids would be likely to result, which would not necessarily be found in the neighbourhood of their parents, as the seeds, being provided with a large tuft of long fine hairs, would be liable to be carried to a considerable distance by the wind, in the same way as thistle seeds are carried, and the new hybrid established in another place, where it in turn, in course of time, might give rise to other hybrids. That such has been the origin of many of the species

is a conclusion that inevitably forces itself on the mind when such species as *S. Barklyi*, *S. lutea*, *S. intermedia*, &c., are examined and compared with other forms. For these reasons I am in favour of uniting most of the forms under the two genera *Stapelia* and *Caralluma*, which, although containing (in the sense that I understand these genera) a heterogeneous assemblage of species in each case, yet in most cases are seen to be bound together by evident relationship with one another, when all the species, described and undescribed (of which there are many), are passed in review. These two genera certainly have a tendency to merge into each other, but seem to have this distinction: in *Stapelia* the segments of the outer corona are free to the base, whilst in *Caralluma* they are more or less connate with each other, or adnate by their edges to the segments of the inner corona, so as to form a cup-shaped outer corona. If the various forms be not so grouped under these two genera, then a large number of small and often monotypic genera would have to be made, especially if the coronal structure is made the basis of classification as hitherto, and taking each variation as of equal generic value. Such genera would be very unnatural, and would be rather a hindrance than an aid to the student who wished to determine his plants; hence I have only retained as genera those groups of species which seem connected with each other by natural bonds, although often diverse in appearance. Yet, in spite of having thus limited the genera to few, rather than increased their number, I am of opinion that some of the genera still retained are more artificial than natural; for instance, *Frerea* and *Trichocaulon* only differ from *Caralluma* in habit, and *Trichocaulon* only differs from *Hoodia* in its corolla, for, although some of the species have a different corona, one has a corona indistinguishable from that of *Hoodia*; possibly it would be more logical and convenient, after all, to do as our predecessors did, and place them all in the genus *Stapelia*, with the exception of *Decabelone*, *Diplocyatha*, *Duvalia*, *Huernia*, and *Huerniopsis*. This view of consolidating the genera especially commends itself to me, as I have every reason to believe that, if collectors would but pay a little more attention to them than hitherto, there are still a large number of forms that remain to be discovered in South and Tropical Africa, many of which, in all probability, will be found to connect and bring together more closely some of those forms which at present appear to be somewhat anomalously placed in the genera where I have located them. In 1873 Dr. John Shaw, of Cape Town, told me that he thought the Stapelias were disappearing from some of the central parts of the Cape Colony, owing to their being eaten by the sheep and goats: the natives also eat them; three or four years later, Mrs. Barber wrote from Kimberley to the same effect.

But I learn from Sir Henry Barkly, and others, that this can scarcely be the case with regard to the whole of South Africa, and that for the most part, except in the vicinity of towns, there is little probability of their being exterminated for a very long time to come: *Stapelia variegata* grew on the Lion Mountain when that place was first discovered, and I am told that it is still plentiful there now.

One interesting feature connected with Stapelias is the vitality of

their seeds, and the rapidity with which they germinate under suitable conditions. When sown in moist, sandy soil, and placed in a greenhouse heated in summer only by the sun's rays, the night temperature going down to 60° Fahr., or lower, I have found that most of the species I have tried will germinate in thirty-six hours, many in twenty-four hours, and that with regard to some species, but not all, it does not appear to matter whether the seed has but just ripened or has been kept for eight or ten years, except that in the latter case there is a considerable percentage that do not germinate at all; and that, although many will germinate in twenty-four hours, some do not do so under from two to four days. Most of them are comparatively hardy, and under shelter, if the soil is kept dry, will stand a succession of slight frosts of from 1° to 3° Fahr., and some will endure as much as 8° Fahr. of frost without injury, if not continued for more than a few hours; I have many plants now living, which I have cultivated for sixteen or eighteen years, that almost every winter have been subjected to a slight amount of frost during severe weather.

It may not be out of place here to say a few words about Jacquin's work on Stapelias. This book appeared in five parts, but is dated 1806, which is in reality the date of only the first part or parts, as the work was not completed until 1819. I have been unable to discover the dates at which the parts appeared, but there is internal evidence to show that a portion was not published until after Haworth's 'Synopsis' had appeared; and Willdenow, in his 'Enumeratio Plantarum Horti Regii Botanici Berolinensis,' published in 1809, only quotes Jacquin's work for the following species:—*ambigua*, *asterias*, *bufonia*, *cæspitosa*, *divaricata*, *geminata*, *glauca*, *hircosa*, *hirsuta*, *hirtella*, *juvencula*, *lepida*, *maculosa*, *patula* (*sororia*, Jacq.), *planiflora*, *radiata*, *reclinata*, *replicata*, *reticulata*, *roriflua*, *rugosa*, *serrulata*, *sororia* (*patula*, Willd.), *sororia* var., *tubata*, *variegata*, *verrucosa*, and *vetula*. For *S. conspurcata*, *grandiflora*, and *normalis* Jacquin is not quoted. And in the 'Supplementum,' published in 1813, Jacquin is not quoted for the names *clavigera*, *comata*, *deflexa*, *fissirostris*, *marmorata*, *ocellata*, and *paniculata*, so that in all probability the species for which Willdenow does not quote Jacquin were not published before 1813, at which date it would appear that Part IV. appeared; Part V. was published, according to Pritzel, in 1819 by the son, Joseph Franz Jacquin, who, however, must have included all the species of that part in his 'Synopsis Stapeliarum,' published in 1816 (see the note on the back of the title-page of that work), but it is not possible to discover which they are.

The plants as represented in Jacquin's work are, many of them, very different in appearance from the plants in nature, the stems being frequently larger and much more elongated than is usually seen; hence, I believe, the plants have not always been recognised from Jacquin's plates. It appears to me that the plants there figured were grown in rich soil, in a hot, and perhaps humid, atmosphere, and were consequently much drawn up, and the appearance of the stems much altered; I have seen similar alteration of the stems in cultivated plants when placed under such conditions.

I now give a key to all the genera of the tribe *Stapelieæ*, in which I have taken into consideration all the species known to me, including those that still remain undescribed. I have retained as genera only those groups of species which appear to me to be the most natural and distinct; and, however diverse some species may appear from others of the same group or genus, I find them so intimately connected and blended by intermediate forms, as previously stated, that they cannot be separated except by the creation of several very artificial genera, depending on very trifling characters, which would doubtless be upset by further discoveries, and would be no aid to the worker in the determination of the plants. It will be seen that the genera *Quaqua* and *Sarcocodon*, previously proposed by myself, and *Bouerosia*, W. and A., disappear from the list, as I cannot separate them by any good characters from *Caralluma*. The stems, however, of *Sarcocodon* are not satisfactorily known, and may afford a distinctive character, but the flowers are merely those of *Caralluma* much enlarged, and compare with some of the species of that genus as *Stapelia gigantea* compares with *S. rufa* or *S. olivacea*. *Obesia*, Haw., as I have previously shown, is synonymous with *Piaranthus*, R. Br., and *Podanthes*, Haw., I cannot distinguish from *Stapelia*.

KEY TO ALL THE GENERA OF THE TRIBE STAPELIEÆ.

(Of those genera marked with a * no specimens were collected by Sir Henry Barkly.)

I. Corona simple, outer corona wanting (very rudimentary in *Echidnopsis*. See also *Caralluma hottentotorum*).

1. Stems usually 4-angled, occasionally 5 to 6-angled, short.
   Corolla distinctly campanulate; coronal segments stout, with the apex produced, erect. **8. Huerniopsis,*** N. E. Br.
   Corolla rotate, or rarely with a very short tube, not campanulate; coronal segments crested on the back. **12. Piaranthus,** R. Br.
2. Stems teretely many-angled, tessellate-tuberculate, elongating. Corolla small, saucer-shaped; coronal segments not crested. **3. Echidnopsis,*** Hook. f.

II. Corona double, outer corona present, arising from the staminal tube.

1. Lobes of the corolla cohering at their apex. **4. Pectinaria,*** Haw.
2. Lobes of the corolla not cohering at their apex.

   A. Limb of the corolla nearly entire, 5-cuspidate. the lobes almost obsolete, outer corona cup-shaped, 5-lobed; stems with numerous tuberculate angles, the tubercles bristle-tipped. **6. Hoodia,** Sweet.

   B. Limb of the corolla distinctly and usually deeply five-lobed:

      a. Stems terete, bearing distinct leaves an inch long; corolla small, rotate; outer corona cup-shaped, the inner coronal segments not produced at the apex. **1. Frerea,*** Dalz.

      b. Stems thick, covered with confluent tubercles more or less arranged in numerous rows or spirals, sometimes irregular, leafless, the tuber-

cles with or without bristle-tips: corolla small, cup-shaped, or sub-campanulate: outer corona of five deeply bifid or emarginate lobes, connate at the base and adnate to the back of the simple inner coronal segments. **5. Trichocaulon,** N. E. Br.

c. Stems 6–12-angled, leafless, the angles tuberculate, tubercles tipped with three bristles, the two side ones deflexed; corolla large, tubular-funnel-shaped; outer corona cup-shaped at the base, produced into 10 filiform processes ending in knobs; inner coronal segments simple, ovate, adnate behind to the outer corona. **7. Decabelone,** Dene.

d. Stems usually 4-angled, rarely 5-6-angled, leafless, or with rudimentary leaves, angles acute or obtuse, toothed or tubercled, the tubercles often spine-tipped, sometimes irregularly placed, rarely obsolete.

† Corolla with a distinct campanulate tube, longer or shorter than the lobes.

x. Outer corona cup-shaped, at least at the base, the segments being adnate to the sides of the inner coronal segments at their base, or connate and adnate to their back, the margin denticulate or produced into five short or long bifid or two-forked lobes: inner coronal segments simple or two-horned, not longer than the anthers, or produced beyond them into erect points. **2. Caralluma,** R. Br.

xx. Outer corona of five emarginate or bifid segments more or less connate at the base, but not adnate to the sides or back of the inner coronal segments.

* Corolla-tube double, an inner tube with a thickened rim arising from near the base of the outer tube. **10. Diplocyatha,*** N. E. Br.

** Corolla-tube simple, the base of the sinuses between the lobes produced into small triangular teeth; outer corona sessile on, and partly adnate to, the base of the corolla. **9. Huernia,** R. Br.

xxx. Outer corona of five segments free to the base. (See also **Huernia**)

Corolla-lobes 2–4 times longer than broad. **2. Caralluma,** R. Br.

Corolla-lobes not much longer than broad. **11. Stapelia,** Linn.

†† Corolla rotate and star-like, or broadly cup-shaped, with or without a raised rim (annulus) on the disc or base of the cup, sometimes forming a short tube for the corona, but with no distinct campanulate tube.

0 The base of the sinuses between the corolla-lobes produced into triangular teeth; outer corona sessile on, and adnate to, the base of the corolla. **9. Huernia,** R. Br.

00 The base of the sinuses between the corolla-lobes not produced into teeth; outer corona not adnate to the base of the corolla.

8 Outer corona of five segments free to their base, entire, emarginate bifid or trifid. (See also next paragraph, **Caralluma.**) **11. Stapelia,** Linn.

88 Outer corona cup-shaped, or the segments very deeply divided into two subulate lobes, and more or less adnate at the base to the staminal tube or base of the inner coronal segments so as

to form a small pouch at the base, rarely quite free to the base. **2. Caralluma,** R. Br. (See also *Stapelia intermedia.*)

888 Outer corora in one piece, disc-like, pentagonal, resting on the rim of the annulus and closing the spurious tube formed by it; corolla-lobes more or less folded lengthwise, and often into narrow vertical plates. **13. Duvalia,** Haw.

KEY TO THE SPECIES COLLECTED BY SIR HENRY BARKLY.

Genus 2.—**Caralluma,** R. Br.

I. Angles of the stem with stout acute teeth, often spine-like.

A. Segments of the inner corona produced beyond the anthers into erect or recurved tips.

a. Pedicels $\frac{1}{3}$–1 inch long, flowers wholly yellow. *C. lutea,* Pl. 1901.

aa. Pedicels less than $\frac{1}{4}$ of an inch long, flowers not wholly yellow.

Corolla-lobes minutely hispid-pubescent inside, the tips of the inner coronal segments with short subulate points. *C. mammillaris,* sub Pl. 1902.

Corolla-lobes glabrous, the tips of the inner coronal segments flattened, linear. *C. linearis,* Pl. 1903A.

AA. Segments of the inner corona not produced into erect or recurved tips.

a. Outer corona cup-shaped, not distinctly five-lobed. *C. armata,* Pl. 1902.

aa. Outer corona distinctly five-lobed.

Flowers ciliate, purple-brown with yellow bars on the basal half of the lobes. *C. dependens,* Pl. 1903B.

Flowers glabrous, entirely light yellow. *C. hottentotorum,* sub Pl. 1903.

II. Angles of the stem very obtuse, with distinct or nearly obsolete large crenations, not toothed.

Pedicels about 1 line long. *C. ramosa,* Pl. 1904.

Pedicels 2–3 inches long. *C. aperta,* Pl. 1905A.

Genus 5.—**Trichocaulon,** N. E. Br.

Tubercles of stem very blunt, not bristle-tipped; flowers yellow, spotted with purple-red. *T. cactiformis,* sub Pl. 1905.

Tubercles of stem ending in a stiff bristle; flowers yellow without spots. *T. flavum,* sub Pl. 1905.

Genus 6.—**Hoodia,** Sweet.

I. Corolla glabrous inside.

a. Corolla distinctly cup-shaped, 2–3 inches in diameter.

Lobes of outer corona distinctly bifid. *H. Barklyi,* sub Pl. 1905.

Lobes of outer corona emarginate. *H. Bainii,* sub Pl. 1905.

aa. Corolla nearly flat, $3\frac{1}{2}$-4 inches in diameter. *H. Gordoni,* sub Pl. 1905.

II. Corolla pilose inside, 3–5 inches in diameter. *H. Currori,* sub Pl. 1905.

Genus 7.—**Decabelone**, Dcne.

D. Barklyi, sub Pl. 1905.

Genus 9.—**Huernia**, R. Br.

1. Corolla-tube campanulate with no annulus around the mouth; flowers yellow, not spotted. *H. primulina*, Pl. 1906.
2. Corolla-tube very short, cup-shaped, with a broad rim or annulus around the mouth.

Flowers marked with small spots; tips of inuer coronal segments not produced beyond the anthers. *H. humilis*, Pl. 1905B.

Flowers marked with large spots, leaving a network of yellow spaces between them: tips of inner coronal segments produced beyond the anthers into erect subulate points. *H. reticulata*, sub Pl. 1906.

Genus 11.—**Stapelia**, Linn.

Key to the Sections.

I. Segments of inner corona not produced at the apex into erect horns, corolla cup-shaped or rotate, with or without a raised rim on the disc around the corona. § **7. Podanthes.**

II. Segments of inner corona produced at the apex into erect horns, which are simple, or with a broad adnate wing at the back, or two-horned, the horns similar or the dorsal one flat and wing-like.

1. Corolla with a raised rim or annulus on the flat or cup-shaped disk around the corona.

Lobes of the corolla fringed with trembling clavate hairs. § **2. Tromotriche.**[1]

Lobes of the corolla either without a fringe, or the hairs are not trembling. § **1. Orbea.**

2. Corolla without an annulus on the disk.

A. Corolla-tube none, or the disk a little depressed or concave.

a. Segments of the outer corona divided into 3 narrow lobes to half-way down or more: corolla usually ciliate with clavate trembling hairs.

§ **4. Tridentea.**

aa. Segments of the outer corona entire, bifid, or 3 (rarely 4–5) -toothed at the apex, but not deeply divided into three.

* Horns of inner coronal segments similar, but the outer ones shorter, both clavate and tuberculate at apex, pedicels 3–6 inches long.

§ **3. Caruncularia.**

** Inner horn clavate, the outer one shorter, and subulate: lobes of the corolla fringed with trembling clavate hairs; pedicels $\frac{1}{2}$–2 inches long. § **2. Tromotriche.**[1]

*** Horns not clavate at the apex, similar or dissimilar, the outer horn subulate or wing-like, free, or more or less completely adnate to the inner horn as a dorsal wing, or reduced to a mere crest, or entirely absent.

[1] Of the section *Tromotriche* no specimens were collected by Sir Henry Barkly.

Lobes of the corolla ciliate with clavate, trembling and very loosely attached hairs. § **4. Tridentea.**

Lobes of the corolla without a fringe, or ciliate with simple hairs, which are neither trembling nor loosely attached. **§ 5. Staplетonia.**

AA. Corolla with a short campanulate tube, the apices of the erect inner coronal segments bifid. § **6. Fissirostres.**

Key to the Species.

§ 1.—Orbea.

I. Stems quite glabrous, flowers 2–3½ inches in diameter.

A. Segments of the outer corona emarginate, bifid, or three-toothed at the apex.

a. Inner coronal segments two-horned.

* The dorsal horn nearly horizontally spreading. *S. horizontalis*, Pl. 1907.

** The dorsal horn ascending, or nearly erect.

x. Buds, when full-grown, abruptly and very acutely pointed.

§ Segments of the outer corona with their apical lobes a little divergent; flowers with moderately large dark purple-brown spots. *S. variegata*, sub Pl. 1907.

§§ Segments of the outer corona with their apical lobes parallel.

Flowers dark-looking, with large crowded spots. *S. variegata*, var. *bufonia*, sub Pl. 1907.

Flowers light-coloured, with small spots. *S. variegata*, var. *pallida*, sub Pl. 1907.

Flowers with a clear ground and large spots, those on the annulus of a very dark blood-red, the rest tending to dark purple-brown. *S. picta*, sub Pl. 1907.

§§§ Segments of the outer corona a little narrowed towards the emarginate or shortly bifid apex; flowers light-coloured, the spots not very crowded. *S. varieyata*, var. *Curtisii*, sub Pl. 1907.

xx. Buds flat when full-grown, not pointed. *S. trisulca*, sub Pl. 1907.

aa. Inner coronal segments produced at the apex only, no dorsal horn. *S. namaquensis*, var. *tridentata*, Pl. 1908c.

AA. Segments of the outer corona entire, acute. *S. namaquensis*, and var. *ciliolata*, Pl. 1908A and B.

II. Stems minutely pubescent, flowers 5–6 inches in diameter. *S. Barklyi*, Pl. 1909.

§ 3.—Caruncularia.

Stems obsoletely toothed, smooth; pedicels very long, erect. *S. pedunculata*, sub Pl. 1909.

§ 4.—Tridentea.

I. Flowers about 1 inch in diameter, yellowish-green, not ciliate. *S. virescens*, Pl. 1910B.

II. Flowers 2 inches or more in diameter, ciliate with trembling clavate hairs.
Corolla dull yellowish-green, densely spotted with dark purple-brown. *S. hircosa*, sub Pl. 1910.
Corolla entirely dark purple-brown without spots. *S. gemmiflora*, sub Pl. 1910.

§ 5.—Stapletonia.

I. Inner coronal segments with an adnate wing behind, or bipartite with a free wing, or horn, behind.

A. Corolla with hairs on the disk, or at least just around the corona, and ciliate on the lobes, 2–6 inches in diameter.

a. Stems pubescent.

x. Stems less than ¾ of an inch square.

† Disk of corolla more or less densely villose, apical half of lobes glabrous.

§ Corolla-lobes usually (always?) gibbous at the apex, disk with a very large, dense cushion of hairs. *S. pulvinata*, sub Pl. 1911.

§§ Corolla-lobes not gibbous at apex, cushion of hairs only moderately large and dense.

8 Corolla-lobes broadly ovate. *S. villosa*, Pl. 1911.

88 Corolla-lobes lanceolate or ovate-lanceolate.
Basal half of corolla-lobes marked with transverse yellow lines. *S. affinis*, Pl. 1912, and *S. patula*, Pl. 1914.
Basal half of corolla-lobes vinous-purple, without transverse yellow lines, apex darker. *S. Arnoti*, Pl. 1915.

†† Disk of corolla shortly and not densely pilose with erect hairs.
Flowers 3–3½ inches in diameter, uniformly purple-brown, lobes very shining. *S. lucida*, Pl. 1919.

xx. Stems ¾–1 inch square.

* Corolla uniform purple-brown, densely villose on the disk. *S. fuscopurpurea*, Pl. 1913.

** Corolla marked with transverse yellow lines.

0 Disk and lobes uniformly covered with somewhat adpressed whitish hairs all pointing to the apex of the lobes. *S. Desmetiana*, Pl. 1916.

00 Disk rather thinly covered with erect hairs.
Inner coronal segments yellow. *S. grandiflora*, var. *lineata*, sub Pl. 1916.
Inner coronal segments purple-brown. *S. ambigua* var., sub Pl. 1916.

aa. Stems glabrous; disk of corolla densely villous.
Stems very distinctly decumbent at the base, of a trailing habit; flowers vinous purple. *S. glabricaulis*, Pl. 1917.
Stems scarcely decumbent at the base, habit compact; flowers dark, smoky purple-brown, sometimes with a few pale transverse lines. *S. tsomoensis*, Pl. 1918.

AA. Corolla glabrous on the disk and lobes, but ciliate with simple hairs, dark olive-green, or olive-brown, not more than 1½ inch in diameter. *S. olivacea*, sub Pl. 1920.

AAA. Corolla glabrous on the disk and lobes and not ciliate, pale greenish-yellow with transverse purple lines 2–2½ inches in diameter. *S. Macowani*, Pl. 1920.

II. Inner coronal segments produced at the apex into a simple subulate horn, without a wing, horn, or crest behind.[1]

Pedicels quite erect; corolla small, like a Turk's cap, the lobes so closely revolute that their tips touch the pedicel and conceal the calyx. *S. erectiflora*, Pl. 1921.

Pedicels drooping; corolla-lobes spreading, the disk covered with clavate white hairs, and the lobes ciliate with similar hairs. *S. glandulifiora*, sub Pl. 1921.

§ 6.—Fissirostres.

Flowers purple-brown or vinous-purple. *S. rufa*, Pl. 1922.
Flowers yellow with purple-brown spots. *S. fissirostris*, sub Pl. 1922.

§ 7.—Podanthes.

I. Corolla flat or nearly so.

Angles of the stem acutely toothed; outer coronal segments 3–4-toothed. *S. intermedia*, Pl. 1910A.

Angles of the stem very obtusely toothed or crenate, but with acute rudimentary leaves; outer coronal segments bifid. *S. parvipuncta*, Pl. 1923.

II. Corolla cup-shaped, with a slightly raised annulus around the corona. *S. verrucosa*, sub Pl. 1923.

Genus 12.—**Piaranthus**, R. Br.[2]

I. Corolla quite glabrous, dark purple-brown or blackish-purple. *P. grivanus*, Pl. 1924A.

II. Corolla pubescent on the face, yellowish, spotted with dark purple or purple-brown.

Corolla-lobes 3–4 lines long; coronal segments not produced into erect points at the apex. *P. comptus*, Pl. 1924B.

Corolla-lobes 5–7 lines long; coronal segments produced into short erect points at the apex. *P. decorus*, sub Pl. 1924.

[1] The above character corresponds with Haworth's genus *Gonostemon*; but I am unable to retain it even as a section. For, although *S. divaricata*, on which Haworth's genus was founded, has no wing, crest, or dorsal horn to the inner coronal segments, yet some closely allied species, such as *S. deflexa*, have a short crest on the back of the shoulder at the base of the horn; this in other allied species passes into a short dorsal wing or horn, thence through other species into the ordinary dorsal wing or horn of the section *Stapletonia*. There are some species, like the two collected by Sir Henry Barkly, entirely without the dorsal wing or horn, but they are unlike each other, and unlike *S. divaricata*; to place these in a section together would be to place unlikes together, and separate *S. divaricata* from the species to which it is naturally closely related, by means of what is evidently a very graduating character.

[2] With regard to the manner in which *Piaranthus* and *Obesia* have been misunderstood by previous authors, I have already given an account in the Journal of the Linnean Society, Botany, vol. 17, p. 162, so that no remarks on the subject are needed at this place, except to correct the authorship of the species placed by me under the genus on p. 163, which should have read *P. punctatus*, R. Br. (*Stapelia punctata*, Mass.); *P. decorus*, N. E. Br. (*Stapelia decora*, Mass.); *P. geminatus*, N. E. Br. (*Stapelia geminata*, Mass.); *P. serrulatus*, N. E. Br. (*Stapelia serrulata* Jacq.), the last three being inadvertently quoted as *Piaranthi* of Masson and Jacquin respectively.

Genus 13.—**Duvalia**, Haw.

I. Corolla-lobes very narrow, and closely replicate to their base; the entire flower quite glabrous, and not ciliate. *D. angustiloba*, Pl. 1925.

II. Corolla-lobes lanceolate or ovate, replicate nearly to their base.

A. Corolla-lobes pubescent on their surface, ciliate with clavate hairs. *D. elegans*, sub Pl. 1925.

AA. Corolla-lobes glabrous on their surface.
Corolla-lobes ciliate with simple hairs. *D. hirtella*, sub Pl. 1925.
Corolla-lobes ciliate with clavate hairs. *D. reclinata*, sub Pl. 1925.

III. Corolla-lobes ovate, replicate closely at the apex only.
Corolla-lobes and annulus pubescent with short dark hairs, lobes ciliate with clavate purple-brown hairs. *D. elegans*, sub Pl. 1925.
Corolla-lobes glabrous, ciliate with clavate purple hairs, annulus clothed with long purple hairs. *D. Corderoyi*, sub Pl. 1925.

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HOOKER'S

ICONES PLANTARUM;

OR,

FIGURES, WITH DESCRIPTIVE CHARACTERS AND REMARKS,

OF NEW AND RARE PLANTS,

SELECTED FROM THE

KEW HERBARIUM.

THIRD SERIES.

EDITED FOR THE BENTHAM TRUSTEES BY

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Plate 1926.

TILIA TUAN, *Szyszyl.*

Tiliaceæ. Tribe Tilieæ.

T. Tuan, *Szyszylowicz* (*sp. nov.*) ; arbor, foliis membranaceis ovatis obliquis basi semicordatis apice cuspidatis, margine integerrimis vel ad apicem indistincte remotiuscule ciliato-dentatis, discoloribus supra glabris subtus adpresse stellato-albo-tomentosis, petiolis stellato-tomentosis, bracteis pedunculo usque ad basin adnatis apice obtusatis basi angustatis, supra nervis exceptis glabris, subtus adpresse stellato-tomentosis, pedunculo æquilongis, floribus cymosis, sepalis 5 extus albo-tomentosis intus barbatis, petalis 5 ovato-lanceolatis, staminodiis paucis, staminibus 25–30, ovario globoso albo-tomentoso.

Hab. China, Prov. Szechwan, District of South Wushan. *Dr. A. Henry* (5874, 7452).

Arbor 40-pedalis. *Folia* 3–5 poll. longa, 2–3 poll. lata; petiolus 1 $2\frac{1}{2}$ poll. longus. *Bracteæ* 4–5 poll. longæ, $\frac{1}{2}$ poll. latæ. *Sepala* 1–$1\frac{1}{2}$ lin. longa. *Petala* 2–$2\frac{1}{2}$ lin. longa. *Stylus* cum ovario $1\frac{1}{2}$–2 lin. longus. —Ign. Szyszylowicz.

The bark, Dr. Henry states, is much used for making shoes.

Fig. 1. Sepal. 2. Stellate hairs of same. 3. Petal. 4. Staminode and stamens. 5. Detached stamen. 6. Pistil. 7. Transverse section of ovary. *All enlarged.*

M. Bouvel et hti.

Tilia Henryana, Szyszyl.

Plate 1927.

TILIA HENRYANA, *Szyszyl.*

Tiliaceæ. Tribe Tilieæ.

T. Henryana, *Szyszylowicz* (*sp. nov.*); arbor foliis coriaceis cordato-vel truncato-rotundatis, apice subito cuspidatis, margine ciliato-dentatis, supra glabris subtus dense fulvo-tomentosis, axillis nervorum primarium secundariumque pilis ferrugineis minute barbulatis, petiolis glabrescentibus, bracteis pedunculo æquilongis fere usque ad basin adnatis apice obtusatis basi angustatis, supra glabris subtus stellato-tomentosis, floribus cymosis fragrantibus, cymis densis, sepalis 5 lanceolatis extus albo-tomentosis, petalis 5–8 albis, staminibus 20-25, ovario 5-sulcato albo-tomentoso, stylo petalis longiore.

Hab. China, Prov. Hupeh, Distr. Hsingshan, *Dr. A. Henry* (7452 A.).

Arbor 30-pedalis. *Folia* $2\frac{1}{2}$–4 poll. longa, 2-$2\frac{1}{2}$ poll. lata; petiolo 1 $1\frac{1}{2}$ poll. longo. *Bracteæ* 5-6 poll. longæ, $\frac{1}{2}$ poll. latæ. *Sepala* 1–$1\frac{1}{2}$ lin. longa. *Petala* $1\frac{1}{2}$–2 lin. longa. *Stamina* 1 lin. longa. *Stylus* cum ovario 2-$2\frac{1}{2}$ lin longus.—Ign. Szyszylowicz.

Fig. 1. Flower. 2. Stellate hairs of calyx. 3. Petal. 4. Staminode and stamens. 5. Pistil. 6. Transverse section of ovary. *All enlarged.*

The same collection of Dr. Henry includes, besides the two foregoing :—

T. Miqueliana, *Maxim. Mél. Biol.* X. 587, var. *chinensis*, Szyszyl., foliis late lanceolato-ovatis basi inæquali-cordatis v. truncatis, arguto-serratis, serraturis incumbentibus breviter calloso-apiculatis, supra glabris subtus parce stellato-pubescentibus albescentibus, axillis nervorum primarium secundarium et nonnunquam tertiarium pilis ferrugineis minute barbulatis ; petiolis adpresse stellato-pilosis ; bracteis pedunculo ad basin adnatis, basi angustatis stellato-pubescentibus cyma longioribus vel æquilongis.

Hab. China, Prov. Hupeh, District of Hsingshan. *Dr. A. Henry* (6474).

Arbor 12-pedalis. *Folia* 4–5 poll. longa, $2\frac{1}{2}$–3 poll. lata; petiolus $1\frac{1}{2}$–2 poll. longus. *Bracteæ* 4–$4\frac{1}{2}$ poll. longæ, $\frac{1}{2}$ poll. latæ.

T. mandshurica, *Rupr. et Maxim. l. c.* 586.

Hab. China, Prov. Hupeh, Fang District, *Dr. A. Henry* (7452 B).

T. Oliveri, *Szyszylowicz* (*sp. nov.*); arbor foliis cordiformibus basi inæqualibus vel truncatis apice breviter acuminatis v. obtusiusculis, margine inæquali-serratis, serraturis breve calloso-apiculatis, supra glabris subtus albo-tomentosis, coriaceis, petiolis glabris, bracteis pedunculo ad basin adnatis apice rotundatis basi angustatis, tenuiter albo-tomentosis pedunculo æquilongis, nuce crasse lignosa ellipsoidea apiculata, leviter tuberculata dense cano-tomentosa.

Hab. China, Prov. Szechwan, District of North Wushan, *Dr. A. Henry* (7089).

Arbor 15-pedalis. *Folia* 2–$2\frac{1}{2}$ poll. longa, $1\frac{3}{4}$–2 poll. lata; petiolus $\frac{2}{3}$–$1\frac{1}{4}$ poll. longus. *Bracteæ* $2\frac{1}{2}$–3 poll. longæ, 4–6 lin. latæ. *Nux* 4–5 lin. longa.—Ign. Szyszylowicz.

M.S. del et lith.

Tapisca sinensis, Oliv.

Plate 1928.

TAPISCIA SINENSIS, *Oliv.*

Sapindaceæ, Sub-order Staphyleæ?

Tapiscia, *Oliv.* (*gen. nov.*). *Flores* parvi regulares hermaphroditi paniculati sessiles. *Calyx* tubuloso-campanulatus breviter late et obtuse 5-lobatus. *Petala* 5 calycem paulo superantia v. subæquantia, oblanceolata obtusa. *Discus* o. *Stamina* 5 cum petalis alterna libera exserta, filamenta anguste lineari-subulata; antheræ oblongo-ellipsoideæ dorsifixæ longitudinaliter dehiscentes. *Ovarium* uniloculare crassiusculum subglobosum; stylus longiusculus, apice stigmatifero minute 2–3-denticulato; ovulum solitarium e basi adscendens subsessile anatropum. *Fructus* subglobosus v. ellipsoideus siccus indehiscens, pericarpio crustaceo. *Semen* lateraliter affixum, hilo latiusculo excavato, albuminosum, albumine corneo copioso; embryo obliquus albumine dimidio brevior; cotyledones radicula æquilongæ planæ ovatæ v. ellipticæ.—Arbor *ut videtur, glabra.* Folia *alterna imparipinnata 5–7-foliolata, stipulata, stipulis caducis; foliola ovato-elliptica basi cordata v. subcordata acutata v. breviter acuminata serrulata subtus glaucescentia glabra v. in axillis costarum subtus villosula, petiolulata.* Paniculæ *axillares petiolo sæpius breviores, divaricatæ, ramulis villosulis; bracteæ minutæ angustæ.*

T. sinensis, *Oliv.* (*sp. unica*).

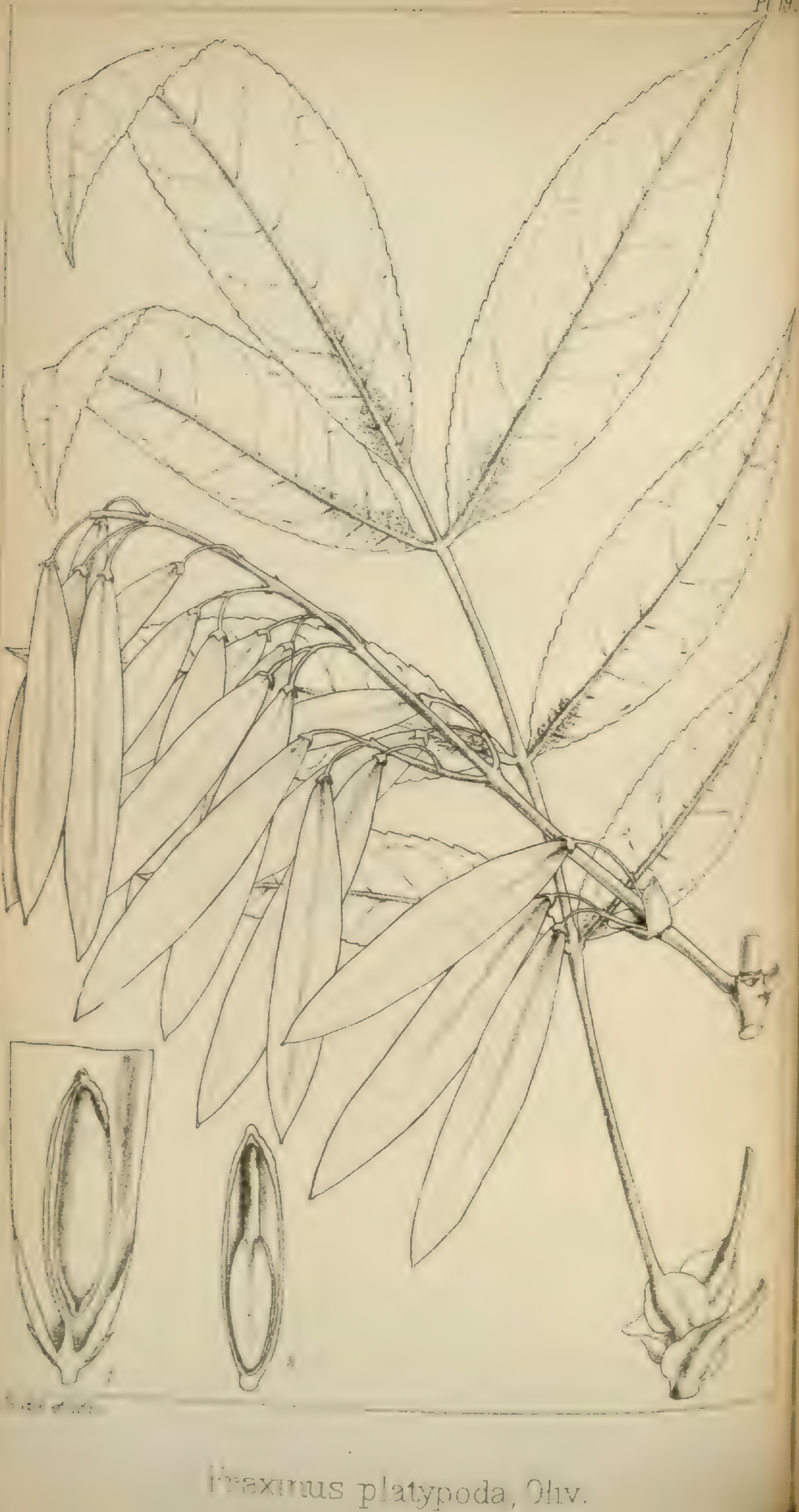
Hab. China, Prov. Szechwan, *Dr. A. Henry* (8990).

Folia 8–15 poll. longa, petiolus subteres glaucescens; foliola 3–5 poll. longa, $1\frac{3}{4}$–$2\frac{1}{2}$ poll. lata; petiolulus (*foliola lat.*) $\frac{1}{4}$–$\frac{1}{2}$ poll. longus, (*f. term.*) $1\frac{1}{4}$–$1\frac{1}{2}$ poll. longus. *Paniculæ* pedunculatæ 2–3 poll. longæ atque latæ. *Flores* 1 lin. longi; stylus exsertus calyce denique duplo longior; paniculæ fructiferæ 3–5 poll. longæ. *Fructus* ellipsoideus v. subglobosus $\frac{1}{4}$ poll. longus.

In general *facies* our dried specimens of this remarkable tree so directly suggest the genus *Pistacia* that I adopt an anagram of this familiar name for its generic designation. It is not without considerable hesitation that I leave it referred to the group of Staphyleæ. The only alternative I can think of is to regard it as an anomalous member of the Anacardiaceæ. It is mainly on the ground of the copious albumen of the seed, the presence of conspicuous stipules (as indi-

cated by their scars, for they must be early deciduous, and are wanting in our specimens, excepting in the winter buds), and the remarkable resemblance of the leaves to those of *Enscaphis* and some other Staphyleæ, that I prefer to place it provisionally with the latter group, notwithstanding its alternate leaves and unilocular uniovulate ovary. —D. Oliver.

Fig. 1. Two flowers. 2. Flower detached. 3. Longitudinal section of flower. 4. Petal. 5. Stamen. 6. Fruit. 7. Vertical section of same, showing embryo. *All enlarged.*



Thaxinus platypoda, Oliv.

Plate 1929.

FRAXINUS PLATYPODA, *Oliv.*

Oleaceæ. Tribe Fraxineæ.

F. platypoda, *Oliv.* (*sp. nov.*); folis 7–9-foliolatis, foliolis ovalibus lanceolatisve leviter acuminatis serrulatis subtus pallidioribus nervo medio prope basin pilosulis tomentellisve, lateralibus subsessilibus, petiolis basi abrupte dilatatis vaginis ovato- v. cordato-rotundatis dorso pubescentibus, samaris ovali-oblongis acutiusculis mucronatis.

Hab. China, Prov. Hupeh, Fang District, *Dr. A. Henry* (6800).

Arbor 20-pedalis. *Folia* 6–9 poll. longa; foliola $2\frac{1}{2}$–$3\frac{1}{2}$ poll. longa, $\frac{2}{3}$–$1\frac{1}{6}$ poll. lata, inferiora minora; vagina petioli 3–5 lin. lata. *Samara* $1\frac{3}{4}$–2 poll. longa, 4–5 lin. lata, basi calyce persistente lobato circumdata.

I do not know any other species of Fraxinus presenting the singular dilatation of the petiole characteristic of this species.—D. Oliver.

Fig. 1. Longitudinal section of base of fruit, showing seed. 2. Longitudinal section of seed. *Enlarged.*

M S del et lith.

Fraxinus retusa, Champ. var; Henryana. Oliv.

Plate 1930.

FRAXINUS RETUSA, *Champ.* var. *Henryana.*

Oleaceæ. Tribe Fraxineæ.

F. (**Ornus**) **retusa**, *Champion* in *Hooker Kew Journ. Bot.* iv. 330, var. *Henryana*, Oliv.; arbuscula 15–20-pedalis glaberrima, foliis 3–5-foliolatis foliolis petiolulatis anguste ovalibus lanceolatisve acutis v. acuminatis serrulatis, paniculis amplis multifloris, floribus albidis graciliter pedicellatis, petalis lineari-oblongis obtusis.

Hab. China, Prov. Szechwan, District of South Wushan, 'occurring only on precipitous edges of cliffs,' *Dr. A. Henry* (5493).

Folia plerumque 3-foliolata, gracile petiolata; foliola in ramulis floriferis tenuiter coriaceis, f. terminale $2\frac{1}{2}$–4 poll. longum, $\frac{1}{2}$–$\frac{3}{4}$ poll. latum; petiolulus $\frac{1}{3}$–$\frac{3}{4}$ poll. longus. *Flores* $\frac{1}{4}$ poll. diam.

This description is from Dr. Henry's Szechwan specimens. The Hongkong specimens (Col. Champion's type) have considerably broader leaflets; those sent by Mr. Fortune from Amoy are intermediate.

The fruit in the Hongkong plant is $\frac{3}{4}$–1 in. long, and distinctly emarginate at apex. I have not seen the fruit of the Szechwan plant. —D. Oliver.

Fig. 1. Flower. 2. Vertical section of calyx. *Enlarged.*

Sycopsis sinensis, Oliv.

Plate 1931.

SYCOPSIS SINENSIS, *Oliv.*

Hamamelideæ.

S sinensis, *Oliv.* (*sp. nov.*); arbuscula 15–20-pedalis v. frutescens, foliis coriaceis petiolatis lanceolatis v. elliptico-lanceolatis acuminatis basi cuneatis v. plus minus rotundatis apicem versus sæpius denticulatis glabris v. subtus pilis minutis stellatis parce conspersis, glomerulis fl. ♀ 6–12-floris breviter pedunculatis fructiferis sæpe recurvis, calycis tubo irregulariter fisso, ovario tomentoso cum setis rigidis erectis dense obsito, pericarpio loculicide bipartito, seminibus lævibus pallide brunneis sub-plano-convexis.

Hab. China, Prov. Hupeh, Districts of Chienshih, No. Tunghu, and Changlo; Prov. Szechwan, District No. Wushan, *Dr. A. Henry* (6019, 7574, and B. 7825).

Folia $2\frac{1}{2}$–3 (–$4\frac{3}{4}$) poll. longa, 1–$1\frac{1}{2}$ poll. lata, petiolus $\frac{1}{3}$–$\frac{1}{2}$ poll. longus. *Calyx* extus dense stellato-tomentosus, lobis intus coloratis recurvis, tubo deinde irregulariter fisso. *Semina* $\frac{1}{4}$ poll. longa.

Prior to the receipt of these specimens from Dr. Henry, our only examples of the genus were those collected by Mr. Griffith in Khasia, which I described thirty years ago in the 'Trans. Linn. Soc.' xxiii. p. 83, under the name of *Sycopsis Griffithiana*. The flowers, as in the Khasia plant, appear to be truly unisexual; the male flowers in the axils of closely imbricating coriaceous squamæ, which, as in our specimens, while still unexpanded, occur as rounded heads the size of a pea, shortly pedunculate and often recurved more or less in the axils of the upper leaves. The ovary differs from that of the Indian species in the presence of copious rigid setæ in addition to the short, close tomentum. The endocarp is crustaceous, splitting loculicidally, conformably with the thinner setose outer layer of the pericarp.—D. Oliver.

Fig. 1. Bract and male flower (bud). 2. Rudimentary perianth-segment. 3. Anthers. 4. Rudiment of pistil. 5. Pistillate flower (far advanced). 6. Vertical section of same. 7. Seed. 8. Longitudinal section of same. *Except* 7, *enlarged*.

Streptopus paniculatus Baker

Plate 1932.

STREPTOPUS PANICULATUS, *Baker.*

Liliaceæ. Tribe Polygonateæ.

S. paniculatus, *Baker* (*sp. nov.*); rhizomate brevi, foliis oblongis acutis membranaceis, floribus viridulis in paniculam amplam laxam ramis simplicibus gracilibus patentibus dispositis, pedicellis apice articulatis flore æquilongis vel longioribus, bracteis lanceolatis minutis, perianthii segmentis lanceolatis acuminatis supra basin patulis, filamentis brevibus, antheris subglobosis.

Hab. China, in the provinces of Hupeh and Szechwan, in bamboo woods, *Henry* (5723).

Folia 6–8 poll. longa venis primariis circiter 7. *Panicula* semipedalis vel pedalis. *Perianthium* 1½–2 lin. longum. *Bacca* parva globosa.

Differs from all the species of this genus which are already known by its terminal panicled inflorescence.—J. G. Baker.

Fig. 1. Flower. 2. Stamen, front and back view. 3. Pistil. 4. Transverse section of ovary. 5. Fruit. *Enlarged.*

M S del et lith

Cephalotaxus Griffithii, Hkf

PLATE 1933.

CEPHALOTAXUS GRIFFITHII, *Hook. fil.*

CONIFERÆ. Tribe TAXODIEÆ.

C. Griffithii, *Hook. f., Flora of Brit. India*, v. 647; arbuscula foliis rigidis linearibus v. anguste oblongo-linearibus sæpius leviter falcatis apice cuspidatis basi truncatis subcordatisve subsessilibus, subtus (fol. junioribus) utrinque latiuscule pallide lineatis, amentis masculis globosis circ. 6-floris, squamis rotundatis concavis basi cuneatim angustatis, antheris subsessilibus 3-(2–4-) locellatis, capitulis fœmineis 5–7-floris breviter pedunculatis, seminibus ellipsoideis acutatis, lævibus, testa bilamellata crustacea.

HAB. China, Prov. Szechwan, Mt. Omei, 3,500 ft., *Rev. E. Faber*; Prov. Hupeh, India, Upper Assam, *Griffith*; Munnipore, *Dr. Watt.*

Folia in ramulis floriferis 9–13 lin. longa, basi $\frac{1}{6}$ poll. lata, disticha patentia. *Semen* 10–12 lin. longum, 6–8 lin. latum.

The figure and description are taken solely from the Chinese specimens, which agree with those gathered by Mr. Griffith, excepting in their shorter more closely distichous leaves. They have the same broad stomatigerous longitudinal band on either side of the midrib, silvery white in the younger leaves.—D. OLIVER.

Fig. 1. Portion of leaf, underside. 2. Male inflorescence. 3. Male flower. 4. Anther, front and back. *Enlarged.*

M S del et lith

Schizophragma integrifolia Oliv.

Plate 1934.

SCHIZOPHRAGMA INTEGRIFOLIA, *Oliv.*

Saxifragaceæ. Tribe Hydrangeæ.

S. integrifolia, *Oliv.* (*sp. nov.*) ; foliis tenuiter coriaceis ovato-ellipticis v. late ellipticis apice acutiusculis v. breviter acuminatis integerrimis supra glabris subtus præcipue in nervis pilosulis, floribus exterioribus radiantibus longe pedicellatis calyce petaloideo ovato- vel oblongo-lanceolato instructis.

Hab. China, Szechwan, Mt. Omei, near the summit, Rev. E. Faber ; *Dr. Henry* (8951).

Folia 4–7 poll. longa, $2\frac{1}{2}$–5 poll. lata ; petiolus 1–$2\frac{1}{2}$ poll. longus. *Calyx petaloideus* (in fl. radiant. abortivis) $1\frac{1}{2}$–2 poll. longus, $\frac{1}{2}$–1 poll. latus.

Although I have not seen a specimen, I think the *Schizophragma* collected by Father David at Monpine, in Eastern Tibet, and which M. Franchet (*Plant. David.* 2*me partie*, p. 44) regards as a variety of *S. hydrangeoides*, S. & Z., must be the same with the plant here figured.

We have a good series of Japanese specimens of *S. hydrangeoides*, but on renewed comparison with these I think the continental plant may well rank as specifically distinct. The much more coriaceous leaves, not cordate-based, and the narrower petaloid calyx-limb of the abortive ray-florets, which florets are represented by a much more conspicuous rudiment in *S. integrifolia*, seem to me to distinguish it well from the Japanese form.—D. Oliver.

Fig. 1. Flower. 2. Stamen. 3. Flower, petals and stamens removed. 4. Transverse section of ovary. 5. Vertical section of same. 6. Base of enlarged calyx-lobe of sterile flower. *Enlarged.*

M S del et lith

Calathodes palmata, H k.f. & T

Plate 1935.

CALATHODES PALMATA, *Hook. f. & Thom.*

Ranunculaceæ. Tribe Helleboreæ.

C. palmata, *Hook f. & Thoms.*, *Flora Indica*, i. 41 ; herba glabra erecta 2–3-pedalis, simplex v. parce ramosa, radice fibrosa, foliis longe petiolatis palmatim tripartitis segmentis profunde trifidis vel lateralibus bipartitis lobis inæqualiter incisis dentibus acutis v. obtusis mucronulatisque, floribus terminalibus solitariis, folliculis 6–10 stipitatis, stipitibus coalitis, apice stylo persistente oblique apiculatis tenuiter coriaceis, oblique transversim venosis, carina medio appendiculatis.

Hab. Himalaya, Sikkim, 10,000 ft. alt., *Sir J. Hooker*; China, Prov. Hupeh, Hsingshan District, 9,000 ft. alt., *Dr. A. Henry* (6977).

Folia $2\frac{1}{2}$–4 poll. longa atque lata ; f. radicalia petiolis 4–6 poll. longis, f. caulina pet. brevioribus basi membranaceo-dilatatis amplexicaulibus. *Flores* (aurei) $\frac{3}{4}$–$1\frac{1}{2}$ poll. diam. *Follicula* radiatim divergentia $1\frac{1}{3}$ poll. longa, stipitibus coalitis $1\frac{1}{2}$–3 lin. longis, appendicibus dorsalibus oblique lanceolato-deltoideis patentibus 1–$1\frac{1}{2}$ lin. longis. *Semina* oblongo-obovoidea lineam longa, testa tenuiter coriacea nigra nitentia.

I find the embryo straight and about $\frac{1}{4}$–$\frac{1}{6}$ the length of the fleshy albumen in one of the two seeds observed in Dr. Henry's fruiting specimens. Our sparing material hardly permits of analysis sufficient to explain the nature of the singular spur-like projection on the back of the follicles; it appears as an obtuse gibbosity at the base of the ovary in the flowering stage.—D. Oliver.

Fig. 1. Stamen. 2. Carpel, base of same laid open with gibbous appendix. *Enlarged.*

Fagus sinensis, Oliv.

Plate 1936.

FAGUS SYLVATICA, *L.*, var. *longipes.*

Cupuliferæ. Tribe Quercineæ.

F. sylvatica, *L., D.C. Prodr. XVI. pt. ii.* 118. *var.* longipes, *Oliv.*; arbor 20–50-pedalis, foliis longiuscule petiolatis ovato-ellipticis acutatis v. breviter acuminatis basi late cuneatis rotundatisve subtus tenuiter vel obsolete sericeis supra medium serrulato-denticulatis, utrinque 9–10-costatis, amentis fructiferis longe pedunculatis (pedunculis involucro $1\frac{1}{2}$–3-plo longioribus), valvis involucri fructus sericeos superantibus, setis dorsalibus patentibus recurvisve rigidiusculis tomentellis.

Hab. China, Prov. Hupeh, South Patung, *Dr. A. Henry* (5334, 7444); *var.* bracteolis involucri exterioribus anguste spatulatim dilatatis, Fang District (6797).

Folia $2\frac{1}{2}$–4 poll. longa, $1\frac{1}{2}$–$2\frac{1}{4}$ poll. lata; petiolus $\frac{1}{2}$–1 poll. longus. *Amenta* ♂ graciliter pedunculata; floribus pedicellatis perianthio longe sericeo-piloso; antheræ glabræ. *Involucrum* fructiferum $\frac{2}{3}$–1 poll. longum; pedunculus apice incrassatus 1–2 poll. longus adscendens.

F. japonica, Maxim., which resembles our plant in its long slender peduncles of the fruit, has a remarkably small involucre, and the valves at length shorter than the enclosed fruits.—D. Oliver.

Fig. 1. Male flower. 2. Involucre of ♀ flower. 3. ♀ flower. 4. Fruit. 5. Seed. 1–3 *enlarged.*

Plate 1937.

DICENTRA MACRANTHA, *Oliv.*

Fumariaceæ.

D. macrantha, *Oliv.* (*sp. nov.*); herba caulescens diffusa glaberrima, foliis amplis triternatim pinnatipartitis segmentis tenuiter membranaceis sessilibus vel breviter ovato- vel oblongo-lanceolatis petiolulatis, acutiusculis, terminalibus basi cuneatim angustatis lateralibus sæpius basi plus minus rotundatis marginibus utrinque 4–8- (3–10-) late crenato-serratis dentibus obtusis oblique mucronulatis, subtus glaucescentibus, racemis paucifloris folio oppositis extra-axillaribus v. terminalibus folio multo brevioribus pendulis, sepalis anguste lanceolatis corolla 4-plo brevioribus, petalis exterioribus basi leviter gibbosis haud calcaratis cum petalis interioribus lanceolatis inferne coalitis, capsula elongata ovali-oblonga stylo persistente coronata, seminibus sublævibus nigris nitidis hilo cristatis.

Hab. China, Prov. Hupeh, District Chienshih, 'in a dark wood, only seen in one place,' *Dr. A. Henry* (5846).

Folia inferiora caulina petiolata 1–1½ ped. longa atque lata; segmentis ultimis sæpe 3–4½ poll. longis c. 1½ poll. latis. *Flores* 1½–2 poll. longi, petalis (in sicco) membranaceis marcescentibus capsulam superantibus.

Our only specimens of this interesting ally of the familiar *D. spectabilis* are unfortunately past the flowering stage, but the sepals and petals persist with but little change, sheathing the capsule until its maturity and dehiscence. The petals cohere about one-third of their length, the slightly dilated free lamina especially of the outer petals being conspicuously pinnately veined. The outer petals are but slightly gibbous at base.—D. Oliver.

Fig. 1. Sepal. 2. Corolla, laid open. 3. Phalange of stamens. 4. Pistil. 5. Apex of style. 6. Seed and its crest. 7. Section of same. 8. Embryo. 3 and 5–8 *enlarged.*

Cyclea racemosa, Oliv.

Plate 1938.

CYCLEA RACEMOSA, *Oliv.*

Menispermaceæ. Tribe Cissampelideæ.

C. racemosa, *Oliv.* (*sp. nov.*); ramis costatis primum pilosis deinde glabratis, foliis ovato-detoideis peltatis, apice tenuiter et breviter acuminatis, basi truncatis, supra parce pilosulis subtus pallidioribus præcipue in nervis pilosis, floribus in racemis angustis axillaribus sæpius solitariis geminisve basi breviter ramosis plus minus pilosis, bracteis parvis lanceolatis cymbiformibus pedicello brevioribus; floribus ♂ pedicello longioribus glabris, calyce breviter 3–4-fido lobis ovatis obtusis, petalis 4 obovatis rotundatisve marginibus recurvis columna staminum 3-plo brevioribus; fl. ♀ ovario setoso-hispido, fructibus parce setulosis, (sicco) radiatim rugulosis.

Hab. China, Prov. Hupeh and Szechwan, *Dr. A. Henry* (2030, 3628, 3925, 4113, 5539, and 5539 A. B.).

Folia $2\frac{1}{2}$–3 poll. longa, 2–$2\frac{4}{5}$ poll lata; petiolus pilosus lamina brevior. *Racemi* fl. ♂ 1–2 poll. longi; fl. ♀ $1\frac{1}{2}$–3 poll. longi. *Fl.* ♂, calyx $\frac{1}{8}$–$\frac{1}{6}$ poll. longus.

In our specimens the sepals of the female flowers are fallen. In the narrow racemes this species resembles *C. deltoidea*, Miers, a glabrous species of Southern China.—D. Oliver.

Fig. 1. Male flower with 4-fid calyx. 2. Same, calyx removed. 3. Petal. 4. Anthers. 5. Female flowers. 6. Fruit. 7. Section of same. 8. Embryo. *Enlarged.*

Aloe kniphofioides, Baker.

Plate 1939.

ALOE KNIPHOFIOIDES, *Baker.*

Liliaceæ. Tribe Aloineæ.

A. kniphofioides, *Baker* (*sp. nov.*); acaulis, foliis linearibus rigidulis ascendentibus margine serrulatis, floribus in racemum laxum simplicem elongatum dispositis, bracteis ovatis acuminatis, pedicellis ascendentibus bracteis subæquilongis, perianthio pallide rubello tubo cylindrico, segmentis lineari-oblongis tubo triplo brevioribus, genitalibus inclusis.

Hab. Pondoland, in damp grassy places on Mount Enkansweni, near the high road between the river Umtamerina and Emagusheni, alt. 4,000 ft., Dec. 1885, *Tyson* (2829).

Folia pedalia vel sesquipedalia, $1\frac{1}{2}$–2 lin. lata. *Racemus* pedalis. *Perianthium* 15–18 lin. longum.

This is a most distinct new species of *Aloe*, without any near alliance with anything already known.—J. G. Baker.

Fig. 1. Portion of leaf showing recurved marginal teeth. 2. Longitudinal section of flowers. 3. Stamen, front and back. 4. Transverse section of ovary. *Enlarged.*

Dermatobotrys Saundersii, Bolus.

Plate 1940.

DERMATOBOTRYS SAUNDERSII, *Bolus.*

Scrophulariaceæ. Tribe Cheloneæ?

Dermatobotrys, *Bolus* (*nov. gen.*). *Calyx* herbaceus ad basin fere 5-partitus, lobis acuminatis valvatis, fructifer vix auctus. *Corolla* tubulosa elongata, sursum gradatim ampliata, fauce non constricto: lobi 5, parvi æquales ovato-rotundati obtusi late imbricati (lobo postico ut videtur exteriore), per anthesin erecto-patentes. *Stamina* 5, æqualia summo tubo affixa inclusa, filamentis filiformibus brevissimis; antheræ erectæ ellipticæ inappendiculatæ, loculis parallelis in longitudinem dehiscentibus. *Discus* pulvinatus parum conspicuus. *Ovarium* 2-loculare; stylus filiformis, corollæ tubo æquilongus, stigmate capitellato; ovula numerosa. *Bacca* (ut videtur) parum succosa ovoidea acuta, pericarpio crasso subcoriaceo, indehiscens. *Semina* numerosa subcompressa, oblongo-ellipsoidea (in cavitatibus placentæ spongiosæ immersa). testa leviter scrobiculata: embryo in albumine corneo rectus vel leviter incurvus, cotyledonibus semiteretibus radicula parum latioribus æquilatisve.—Frutex *sarmentosus epiphyticus? glaber.* Folia *petiolata, opposita, oblongo-ovata, acuta vel acuminata, repando-dentata, rubro-venosa, subcarnosa.* Flores *ad nodos axillares, sæpius terni, breviter pedicellati, patentes, basi bractea lineari præditi.* Calycis *lobi lineari-lanceolati.* Corolla *intus basin versus pilis brevibus albis suffulta.*

Dermatobotrys Saundersii, *Bolus* (*sp. unica*). *Ramuli* ultimi 3-4 millim. crassi. *Folia* majora (cum petiolis 1–5 cm. longis) 13–15 cm. longa, 5–6–9 cm. lata; calycis lobi 3–4 millim. longi; corolla 4 cm. longa, lobis 3–4 millim. longis; bacca matura 2 cm. longa.

Hab. Etshowe, Zululand; flor. July Aug., *C. Saunders, Esq*; **Natal**, *Gerrard* (1417), *J. M. Wood.*

Mr. Saunders describes this plant as a parasite, killing the trees on which it lives, but it is doubtless epiphytic as Mr. Wood states it to be, with a tendency to fix itself on trees already dead. I am indebted for living specimens and the inspection of a characteristic drawing to Mrs. K. Saunders of Natal, who has already sent so many interesting novelties from that region.

The plant had previously, however, been found by Mr. J. Medley Wood, the energetic curator of the Natal Botanic Gardens, as that gentleman has since informed me; and though his specimens

were not in flower he was at once struck by its peculiar appearance, and only awaited another opportunity to complete them. (The late Mr. Gerrard was apparently the first to discover the plant, and his specimens from Natal, distributed under No 1417, in fruit only, have been in the Kew Herbarium some eighteen years.)—H. Bolus.

(With regard to the affinity of this plant it is due to my friend Mr. Bolus to say that he referred it with little hesitation to Solanaceæ. I think, however, he cannot have had the advantage of examining well-developed seeds, as he described the embryo as much incurved. With an ample supply preserved in glycerine, I must say I find it either straight or very nearly so, about $\frac{2}{3}$ or $\frac{3}{4}$ the length of the seed. Notwithstanding the complete development of the fifth stamen, which is represented by a more or less conspicuous staminode in the genera of Cheloneæ which I imagine it most nearly to approach, I think the bilabiate æstivation, and the straight embryo, with apparently a more or less quadrangular stem and decussate leaves, clearly indicate Scrophulariaceous affinity.—D. Oliver.)

Fig. 1. Æstivation of corolla-lobes. 2. Bud. 3. Calyx and pistil. 4. Corolla, laid open. 5. Ovary. 6. Transverse section of ovary. 7. Seed. 8. Longitudinal section of same, with embryo. *Enlarged.*

Vaccinum Exul Bolus.

Plate 1941.

VACCINIUM EXUL, *Bolus.*

Vacciniaceæ. Tribe Euvaccineæ.

V. Exul, *Bolus* (*un. sp.*); fruticosus, erectus, ramosus, bipedalis vel ultra; ramis foliosis, cinereis tenuiter pubescentibus; foliis breve petiolatis coriaceis lanceolatis acutis vel acuminatis, serrulatis serraturis mucronulis minutis articulatis auctis, penniveniis; racemis axillaribus patentibus, folio brevioribus; bracteis late ovatis ciliatis, bracteolis lanceolato-linearibus acuminatis; pedicellis sub ovario articulatis; calyce glabro obconico, lobis late ovatis acuminatis; corolla oblongo-urceolata fauce parum angustata, lobis brevibus obtusiusculis patentibus; staminibus parum exsertis, filamentis linearibus antice pilosis anthera brevioribus, antheris sursum tubuloso-productis scabris dorso exappendiculatis, poris minimis ovalibus terminalibus; stylo recto incluso apice parum ampliato, stigmate simplici; ovario infero apice pulvinato glabro, 5-loculari, loculis pluri-ovulatis.

Hab. In saxosis montium Drakensbergen prope Devil's Kantoor (Reipublicæ Transvaalensis) alt. circa 1,700 metr., fl. Sept. legi (No. 7616 *in herb. Kewensi*, &c.).

Folia 4–5 cm. longa, 1·3–1·8 cm. lata, internodiis multo longiora. *Racemi* 2 cm. longi; pedicelli 5–7 millim. longi. *Corolla* 5 mill. longa.

Mr. N. E. Brown, of Kew, who looked over some of my plants collected during a journey from Delagoa Bay to the Transvaal Republic, drew my attention to this as a very interesting discovery. No *Vaccinium* has hitherto been found in South Africa, nor indeed any so far south (the station above named lies about 25° 30′ S. Lat.) in any part of the world. One species was discovered by Forbes at Mozambique, which would be about 15° S.; and several are described from the Island of Madagascar. It forms another link in the chain of evidence that the mountain range of Eastern Africa has been the great highway of interchange, as well for northern forms to travel southward as for South African forms to migrate northward. We might have expected our plant to be more like Forbes's; it differs, however, considerably both in the form of the corolla and the stamens, and in these respects is very like *V. javanicum*, *Hook. Icon. Plant.* t. 740.—H. Bolus.

Fig. 1. Flowers and bracts. 2. Same, corolla removed. 3. Stamen, front and back. *Enlarged.*

Tysonia africana, Bolus.

Plate 1942.

TYSONIA AFRICANA, *Bolus.*

Boragineæ. Tribe Borageæ.

Tysonia, *Bolus* (*gen. nov.*). *Calyx* sub-5-partitus, segmentis lanceolatis, fructifer persisteus parum auctus. *Corolla* subrotata, fauce non ampliata, squamis erectis exsertis, quadrato-oblongis, retusis, lobi 5 subpatentes tubo æquilongi, **ima basi squamis v. callis 10** instructa. *Stamina* 5, tubo affixa, exserta, filamenta corollæ lobis æquilonga filiformia, basi valde ampliata complanata; antheræ oblongæ obtusæ versatiles. *Ovarium* gynobasi crassa semiglobosa impositum, apice indistincte 4-lobum, 4-loculare; stylus terminalis indivisus filiformis, staminibus subæquilongus, stigmate capitellato; ovula angulo interiori affixa, horizontalia. *Nuculæ* 1 3, subdisciformes, quarum una (an demum plures?) major, margine in alam latam cartilagineam rugulosam crenatam gynobasi multo latiorem producta, secunda tertiaque minores margine angustiori (an demum producto?) totæ in areolis depressis gynobasis pyramidalis insidentes. *Semen* sub apice nuculæ affixum, exalbuminosum, erectum, ovatum, compressum, testa venis curvis percursa; cotyledones cuneato-obovatæ plano-convexæ, radicula brevi multo majores.—Herba *perennis* (?) *valida, scabro-punctata.* Caulis *erectus simplex.* Folia *inferiora ampla, petiolata, ovata acuta, superiora minora, lanceolata, acuminata, sessilia, omnia basi angustata subtus prominenter nervosa.* Inflorescentia *terminalis pro ordine ampla multiflora e cymis scorpioideis sæpe dichotomis parce bracteatis in paniculam disposita; flores longe pedicellati cum pedicellis ebracteati.* Calycis *lobi obtusi apicem versus ciliati.* Corollæ *tubus venis 20 parallelis ornatus, lobi reticulato-venosi (colore, ex inventore, gilvo), gibbæ pubescentes, squamæ nectariferæ basales cornubus duobus divergentibus auctæ.*

Tysonia africana, *Bolus* (*sp. unica*).

Hab. Juxta rivulos circa Clydesdale, Griqualand Orientalis (Kaffrariæ provincia), alt. circ. 3,000 ped., flor. Dec., legit *W. Tyson* (2117).

Tripedalis vel ultra. *Folium* inferum (cum petiolo 14 centim. longo) 38 cm. longum, 15 cm. latum, caulina 20–10 cm. longa. *Panicula* 30–40 cm. longa, 15–25 cm. lata; pedicelli sub anthesi 2–2·5 cm., sub fructu 2·5–3·5 cm. longi. *Corollæ* tubus 7–9 millim. longus. *Nucula* major cum ala (an matura?) 1·1 cm. longa, 1·5 cm. lata.

According to Mr. Tyson this plant grew abundantly where he found it, and also on the banks of several other rivulets in the neighbourhood.

Allied to *Carrinia* and *Solenanthus*, and more nearly to *Rindera*—all of which have hitherto been found only in Europe and Asia. From the last (of which I have here no access to figures or specimens) it differs chiefly, according to description, by the appendages of the corolla springing from the top of the tube and exserted, by the presence of distinct scales at the base of the tube, by its long filaments and short oblong anthers, and by the rarely more than one winged nucule. Of eight fruiting calyces seen none had more than one such nucule. Yet two of the remaining ones seemed to be fertile, and their margin might become developed into a wing. The habit, leaves, and shape of the seed strikingly resemble those of *Myosotidium nobile*, *Hook. Bot. Mag.* t. 5137, but there are great differences in the flower, fruit, and shape of the cotyledons.

I am glad of the opportunity to dedicate this genus to Mr. W. Tyson, whose diligent collections in the little known districts of Upper Kaffraria have added much to our knowledge of the botany of that region.—H. Bolus.

Fig. 1. Corolla laid open. 2. Pistil. 3. Fruit, with undeveloped carpels on near side. 4. Same, with ripe carpel. 5. Fruit-carpel. 6. Seed 7. Embryo. *Enlarged.*

M S del et lith

Populus lasiocarpa, Oliv.

Plate 1943.

POPULUS LASIOCARPA, *Oliv.*

P. lasiocarpa, *Oliv.* (*sp. nov.*) ; arbor, ramulis crassiusculis hornotinis gemmisque albido-tomentosis, foliis amplis ovato-cordiformibus acutis basi profunde cordatis sinu angusto, e basi ad apicem serratis serraturis incurvis calloso-glandulosis obtusis, supra glabris subtus costa nervisque secundariis parce tomentellis glabratisve, longiuscule petiolatis, stipulis anguste linearibus caducis, amentis fructiferis elongatis capsulis dissitis dense albido-lanuginosis sessilibus v. subsessilibus, bracteis scariosis rotundatis apiculatis, cupula fructifera glabra irregulariter lobata basin capsulæ cingente.

Hab. China, Prov. Hupeh, District of Chienshih, *Dr. A. Henry* (5423 A.).

Folia 6–11 poll. longa, $4\frac{1}{2}$–$7\frac{1}{2}$ poll. lata; petiolus 2-$3\frac{1}{2}$ poll. longus teretiusculus deinde glabratus apice lanuginosus. *Amenta* fructifera 5–8 poll. longa, rhachi parce albido-tomentosa. *Capsulæ* ovoideæ v. oblongo-ovoideæ 2–3-valves.

Dr. Henry says this is a 'good timber tree,' common in mountains from 4,000 to 6,000 ft. Under number 5423 he sends male catkins, found under a tree at that time of year (May 3) leafless, from South Patung. These may well belong to the same species (though perhaps not), and a catkin is added to our plate. These are 3–4 in. in length, glabrate with but a few sparse silky hairs, with finely laciniate caducous bracts narrowed into their stipes, the cupule with rotundate or deltoid lobes, and 30–40 stamens.—D. Oliver.

Fig. 1. Bract of ♂ flower. 2. ♂ flower. 3. Stamen. 4. Bract of ♀ flower. 5. Fruit. ***Enlarged.***

M.S. del. et lith.

Oreocharis Henryana, Oliv.

Plate 1944.

OREOCHARIS HENRYANA, *Oliv.*

Gesneraceæ. Tribe Cyrtandreæ.

O. (**Euoreocharis**) **Henryana**, *Oliv.* (*sp. nov.*) ; herba acaulis, foliis radicalibus lamina carnosula ovato- vel oblongo-lanceolata petiolo æquilonga obtusiuscula deltoideo- v. obtuse dentata, basi obtusa v. subcordata, supra setaceo-pilosula, subtus dense cinnamomeo-lanuginosa, scapis 6–8-floris pilis purpureis septatis parce villosulis, pedicellis flore 2–4-plo longioribus, calyce 5-partito segmentis linearisubulatis obtusiusculis, corolla campanulata calyce 2-plo longiore breviter bilabiata, lobis 2 posticis rotundatis, 3 anticis quadratooblongis obtusis integris v. leviter retusis, staminibus corolla subbrevioribus, antheris liberis, locellis apice subconfluentibus, ovario glabro basi disco carnosulo subintegro cincto, capsula anguste lineari.

Hab. China, Prov. Szechwan, *Dr. A. Henry's Collector* (No. 8999).

Folia lamina 2–2$\frac{3}{4}$ poll. longa, $\frac{2}{3}$–$\frac{5}{6}$ poll. lata ; petiolus crassus dense lanuginosus 1$\frac{1}{2}$–2$\frac{1}{2}$ poll. longus. *Scapi* folia superantes 4–7 poll. longi. *Flores* $\frac{1}{3}$–$\frac{1}{2}$ poll. longi. *Capsula* (vix matura) 1–1$\frac{1}{4}$ poll. longa.

This plant was forwarded from Central China after Dr. Henry left Ichang, so that we have no precise information as to its habitat. The flowers seem to have been rather darkly coloured. Its nearest ally known to me is *O. Benthami*, C. B. Clarke.—D. Oliver.

Fig. 1. Calyx. 2. Corolla laid open. 3. Stamen. 4. Ovary and sheathing disk. 5. Transverse section of ovary. 6. Young fruit. 1–5 *enlarged.*

M.S. del. et lith.

Clematis formosana, O. Kuntze

Plate 1945.

CLEMATIS FORMOSANA, *O. Kuntze.*

Ranunculaceæ. Tribe Clematideæ.

C. formosana, *O. Kuntze* (*sp. nov.*) ; frutex scandens, ramis tenuibus basi perulatis, foliis trifoliolatis membranaceis foliolis vix pollicaribus angustis oblongo-linearibus breviter apiculatis basi plerumque brevilobis parce pilosulis, paniculis paucifloris foliatis, sepalis albis patulis obovatis extus glabriusculis intus pubescentibus, marginibus haud alatis, staminibus biserialibus haud numerosis, antheris brevibus ellipsoideis muticis, filamentis carnosulis glabris haud torulosis nigrescentibus, **ovariis paucis.**

Hab. Taiwan, Formosa, *G. M. H. Playfair, Esq.* (No. 307).

Ramuli parce pilosuli. *Foliola* lateralia $\frac{1}{3}$–$\frac{3}{4}$ poll. longa, intermedia $\frac{3}{4}$–1 poll. longa; petiolus $\frac{3}{4}$–1 poll. longus. *Flores* $\frac{1}{2}$–$\frac{2}{3}$ poll. diam.—Dr. O. Kuntze.

Fig. 1. Sepal. 2. Stamen. 3. Carpel. 4. Longitudinal section of ovary. *Enlarged.*

M.S. del et lith

Apios macrantha, Oliv.

Plate 1946.

APIOS MACRANTHA, *Oliv.*

Leguminosæ. Tribe Phaseoleæ.

A. macrantha, *Oliv.* (*sp. nov.*); glabra v. subglabra, ramis floriferis gracilibus, foliis 5–7-foliolatis, foliolis ovato-lanceolatis leviter acuminatis apice longiuscule costa producta apiculatis glabris haud triplinerviis, racemis folio longioribus dissitifloris pedunculatis, floribus sæpius geminis, calycis labio superiore integro late ovato-rotundato subito apiculato, labio inferiore lobis lateralibus oblique lanceolatis acuminatis, lobo centrali latiore ovato-rotundato cuspidato. corolla majuscula, vexillo calyce 6-plo longiore, ovario stipitato pubescente 7–8-ovulato.

Hab. China, Prov. Szechwan, *Dr. A. Henry's* Collector (8984).

Folia 5–8 poll. longa, stipulæ subulatæ deciduæ; foliola 2- (v. terminalia 3-) pollicaria, $\frac{2}{3}$–$\frac{5}{6}$ poll. (v. term. $1\frac{1}{6}$ poll.) lata; petiolula hirtella 1–$1\frac{1}{2}$ lin. longa. *Racemi* 7–10 poll. longi. *Vexillum* $\frac{3}{4}$–$\frac{5}{6}$ poll. longum atque latum. *Carina* elongata incurva obtusiuscula.

This plant has much of the general *facies* of *A. Fortunei*, Maxim., but besides the much larger flowers, the leaflets are never triplinerved. I have not seen the legume.—D. Oliver.

Fig. 1. Calyx. 2. Vexillum. 3. Ala. 4. Carina. 5. Andrœcium. 6. Pistil. 7. Longitudinal section of ovary. 5–7 *enlarged.*

W. Smith, lith.

Rubus malifolius, Focke

Plate 1947.

RUBUS MALIFOLIUS, *Focke.*

Rosaceæ. Tribe Rubeæ.

R. malifolius, *Focke* (*sp. nov.*) ; lignosus prostratus v. scandens parce aculeolatus v. subinermis, foliis 1-foliolatis petiolatis oblongo-ellipticis breviter acuminatis basi obtusis serratis glabris v. subtus costa nervisque secundariis primum parce lanuginosis, venulis ultimis subparallelis numerosis obliquis, floribus in racemos terminales paucifloros dispositis, bracteis scariosis lineari-oblongis deciduis ; alabastris ovoideo-globosis dense tomentosis, petalis rotundatis breviter unguiculatis, toro longe hirsuto, ovariis glabris.

Hab. China, Prov. Hupeh, District of Chienshih, *Dr. A. Henry* (5794).

[*Caules* lignosi repentes aculeis brevibus recurvis armati. *Rami* hornotini simplices pubescentes inermes foliosi vel steriles vel apice floriferi. *Folia* petiolata simplicia, inferiora ovalia, superiora oblonga acuminata, omnia obtuse (sed sæpe mucronato-) serrata supra glabra, subtus in nervis puberula ; folia inferiora 2 poll. longa, 1–1¼ poll. lata ; suprema 3½–4 poll. longa, 1⅓–1⅔ poll. lata ; longitudo petiolorum ½–½ poll. *Flores* pauci in racemum terminalem aphyllum inermem dispositi ; bracteæ lineares deciduæ. Pedunculi ½ poll. longi. *Florum diam.* ⅓ poll. *Sepala* ovata mucronata tomentosa. *Petala* lata externa hirta. *Filamenta* subulata puberula, antheræ hirsutissimæ. *Torus* hirsutissimus, germina cum stylis elongatis apice clavatis glabra.

The leaves of this species resemble very much those of *R. pirifolius*, Sm., which is, however, a taller and stouter plant bearing compound panicles of numerous small flowers.—Dr. W. O. Focke.]

Fig. 1. Petal. 2. Stamen front and back. 3. Carpel, showing elongate style. *Enlarged.*

M S. del et lith.

Rubus simplex, Focke.

Plate 1948.

RUBUS SIMPLEX, *Focke.*

Rosaceæ. Tribe Rubeæ.

R. simplex, *Focke* (*sp. nov.*); herbaceus, caule erecto glabrato parce aculeolato, foliis trifoliolatis, foliolis ovatis ovato-lanceolatisve inæqualiter mucronato-serratis f. intermedio basi interdum leviter cordato, floribus paucis breviter pedunculatis in fasciculos 2–4-floros axillares v. quasi-terminales dispositis, petalis pubescentibus calyce vix longioribus, calycis lobis fructiferis erectiusculis ovato-deltoideis subulato-acuminatis.

Hab. China, Prov. Hupeh (5982) and Prov. Szechwan (7333), *Dr. A. Henry.*

[*Caules* e radice repente lignosa fibrillis numerosis instructa herbacei simplices erecti 1–2-pedales puberuli sparsim et minute aculeolati. *Folia* circa septem longe petiolata ternata, petiolus $2\frac{1}{2}$–4 poll. longus; stipulæ e basi petioli ortæ lineari-lanceolatæ; petiolus præcipue in foliis inferioribus longus puberulus cum petiolulis et nervis intermediis paginæ foliolorum inferioris sparsim et minute aculeolatus. *Foliola* $2\frac{1}{2}$–$3\frac{1}{2}$ (–5) poll. longa, inæqualiter sed non profunde mucronato-serrata, super striguloso-pilosa, subtus in nervis solum puberula, lateralia breviter petiolulata intermedio vix minora; intermedium longius petiolulatum ovatum, in foliis superioribus acuminatum; petioluli intermedii $\frac{3}{4}$–1 poll. longi. *Flores* diam. $\frac{1}{2}$–$\frac{2}{3}$ poll. pauci (2–4) rarius singuli, et in axillis foliorum superiorum et terminales, omnes breviter pedunculati, pedunculi $\frac{1}{4}$–$\frac{1}{2}$ poll.; cupula sat ampla hypocrateriformis cum sepalis triangularibus subulato-acuminatis tomentoso-marginatis pubescens viridis aculeolata; petala pubescentia, sepalis, ut videtur, vix longiora; stamina numerosa; post anthesin sepala eriguntur, in fructu maturo rubro eduli patentia sunt. *Putamen* rugulosum.

This species seems to propagate by creeping roots, for in the dried specimens nothing is to be seen like the annual leafy runners of *R. saxatilis*, L. *R. simplex* can only be compared with *R. Clarkei*, Hook. f., and *R. saxatilis*, L., but it may be easily distinguished from either of these species.—Dr. W. O. Focke.]

Fig. 1. Petal. 2. Stamen, front and back. 3. Carpel. *Enlarged.*

M. S. del. et lith.

Heteropsis Jenmani, Oliv.

Plate 1949.

HETEROPSIS JENMANI, *Oliv.*

Aroideæ. Tribe Pothoeæ (Engl.).

H. Jenmani, *Oliv.* (*sp. nov.*); foliis oblongo-oblanceolatis acuminatis costa subtus prominula, petiolo brevi canaliculato basi caulem plus minus amplectente, pedunculis axillaribus spatha brevioribus teretibus 3 5-annulatis, spatha convoluta ellipsoidea breviter abrupte rostrata, spadice breviter stipitato subclavato obtuso.

Hab. British Guiana, 'called *Sarabanaroo* by the Indians,' *G. S. Jenman* (No. 5000).

Folia 6–8 poll. longa, 2–2½ poll. lata; petiolus 3–5 lin. longus. *Spatha* 2½–2¾ poll. longa, clausa 1½–1¾ poll. diam. *Spadix* 2 poll. longus, stipite ¼–⅓ poll. longo.

Of this species Mr. Jenman writes:—'The plant grows up the stems of trees, from which it sends down long aerial roots, which, split into thin strips, form the most useful tying material the Indians employ. The construction of their houses is all done with it, used, as it has been from time immemorial by them, instead of nails or bolts. They also make whips, which they call "Macwarrie," and use in their games,—and many other things of it. Curiously, these whips have been adopted by Government for use in prisons in cases where flogging is awarded to juvenile offenders, and are called "Tamarind rods" in the judicial phraseology uniformly used when a sentence of the kind is given. This, no doubt, is a survival of a name which denoted at one time the real material employed.' The aerial root sent by Mr. Jenman is about the thickness of a swan-quill, terete, with the typical polyarchal disposition of its vascular elements, as, for instance, are shown in the figures of similar roots given by A. F. W. Schimper in his very remarkable and capital paper 'Ueber die Bau- und Lebensweise der Epiphyten Westindiens.'

H. oblongifolia, Kth., is the most nearly allied species to *H. Jenmani* that I have seen, but in this species the ellipsoidal spadix is only ⅔–¾ of an inch in length on a peduncle of about the same; the leaves also do not show the tendency to an oblanceolate contour so evidently as in *H. Jenmani*.—D. Oliver.

Fig. 1. Flower, detached. 2. Stamen, front and back. 3. Vertical section of ovary. *Enlarged.*

M.S.del.et lith.

Plate 1950.

EUCOMMIA ULMOIDES, *Oliv.*

Genus anomalum, incertæ sedis.

Eucommia, *Oliv.* (*gen nov.*). *Flores* ut videtur dioici: fœminei achlamydei; (fl. masc. non vidi). *Pistillum* dimerum, syncarpicum. *Fructus* samaroideus, indehiscens, monospermus, samara periptera tenuiter coriacea stipitata ovali-oblonga basi angustata apice breviter bifida, divisuris facie interna dense papilloso-stigmatosis. *Semen* unicum sub apice loculi appensum anguste ovali-oblongum albuminosum; testa membranacea, raphe dorsali; embryo centralis rectus albumine æquilongus, radicula supera plus minus compressa, cotyledones planæ carnosæ lineari-oblongæ radicula longiores; funiculus brevissimus medio leviter incrassatus.—Arbor 20–30-*pedalis*. Folia *alterna exstipulata petiolata simplicia elliptica acuminata serrata supra glabrata subtus præcipue in costa nervisque parce pilosula*. Fructus *in axillis bractearum solitarii, breviter pedicellati; bracteæ squamæformes ovato-rotundatæ concavæ caducæ; samaræ stipes basi articulatus*.

E. ulmoides, *Oliv.* (*sp. unica*).

Hab. China, Prov. Hupeh: cultivated in the Districts of Chang-yang and Patung. 'I have never seen it wild, but I was informed it occurred wild in Fang and other Districts to the north,' *Dr. A. Henry* (Nos. 3182, 4683. 7936).

Folia 6–7 poll. longa, $2\frac{1}{2}$–3 poll. lata, in ramulis fructiferis minora, $2\frac{1}{2}$–4 poll. longa, $1\frac{1}{2}$–2 poll. lata; petiolus $\frac{1}{2}$–$\frac{3}{4}$ poll. longus. *Samara* $1\frac{1}{4}$–$1\frac{1}{2}$ poll. longa, $\frac{1}{3}$–$\frac{1}{2}$ poll. lata.

In the absence of male-flowers—indeed, of flowers of any kind, for the only young ovaries which I have seen were dissected out of a small axillary perulate bud—I am unable to speak with any confidence as to the affinity of this remarkable tree. The fruit and general aspect of the specimens at once suggest Ulmaceæ, but there is no trace of perianth even in the winter-buds referred to, the leaves are destitute of stipules, and in the cell of the fruit, which survives and includes the solitary seed, there is always present a collateral, or nearly collateral, pendulous abortive second ovule. The tribe Phyllantheæ of Euphorbiaceæ occurs to one as a probable affinity; but, until additional material has been received, speculation can hardly be profitable.

Meantime, as the tree is of considerable commercial importance, highly valued in Chinese materia medica, it has seemed desirable to call attention to it in 'Icones Plantarum.'

The most singular feature about the plant is the extraordinary abundance of an elastic gum in all the younger tissues—excepting perhaps the wood proper—in the bark (in the usual sense of the word), the leaves and petioles, and pericarp; any of these snapped across, and the parts drawn asunder, exhibit the silvery sheen of innumerable threads of this gum. The morphological relations and general histology of the cells which give rise to this substance, we hope to have the opportunity of describing from specimens in fluid or living, which, through Dr. Henry's kind offices, there is probability we may soon receive. It is better, therefore, to abstain from any discussion on this head, from inadequate data, in this place. 'The bark,' Dr. Henry, under No. 3182, wrote, 'is a most valued medicine with the Chinese, selling at 4*s.* to 8*s.* per lb.' Under No. 4683 (the cultivated Patung specimens), he says further: 'It is planted from the seeds (fruit). The tree is cut down in the third to sixth Chinese months and stripped of its bark. . . . During the last twenty years the production seems to be diminishing in Szechwan, from which it chiefly comes, and the price has increased four- or fivefold. . . . Whether the bark has any real medicinal properties I do not know.' Dr. H. says the tree is figured in the 'Chih-wu-ming,' xxxiii. 18, but I fail to identify it with the figure given under that citation in the copy of that work in the library of the Kew Herbarium. Dr. Bretschneider, in a letter to the Director, referring to the bark of this tree, remarked that 'the tree from which it is derived is probably unknown to botanists. The Chinese name given to it is "Tu chung." In Japan this Chinese name is applied to *Euonymus japonicus*, Thb.' The following particulars, translated from the Chinese, given in Dr. F. P. Smith's 'Contributions towards the Materia Medica, &c., of China,' p. 94, under *Euonymus japonicus*, relate to the Chinese plant: '. . . The leaves of this tree are eaten when young. The fruit is astringent. The wood was formerly used to make pattens. Tonic, invigorating, and arthritic properties are ascribed to the bark. . . .'

It is with the bark of *Eucommia ulmoides* that a roll of bark mounted on a sheet of *Parameria glandulifera*, Bth. and Hk. f., in the Kew Herbarium may be identified. This specimen was received from Monsieur L. Pierre, to whom the herbarium is indebted for so many valuable contributions from Cochin-China and Cambodia, and who agrees with me that it does not belong to the *Parameria*. (See 'Report on Royal Gardens, Kew, for 1881,' p. 47.)—D. Oliver.

Fig. 1. Upper portion of fruit. 2. Longitudinal section of fruit. 3. Transverse section of seed through radicle. 4. Same through cotyledons. 5. Embryo. *Enlarged.*

VOL. X.—PART III.] [APRIL.

HOOKER'S

ICONES PLANTARUM;

OR,

FIGURES, WITH DESCRIPTIVE CHARACTERS AND REMARKS,

OF NEW AND RARE PLANTS,

SELECTED FROM THE

KEW HERBARIUM.

THIRD SERIES.

EDITED FOR THE BENTHAM TRUSTEES BY

DANIEL OLIVER, F.R.S., F.L.S.

EMERITUS PROFESSOR OF BOTANY IN UNIVERSITY COLLEGE, LONDON: LATE KEEPER OF THE HERBARIUM AND LIBRARY, ROYAL BOTANIC GARDENS, KEW.

Under the Authority of the Director of the Royal Botanic Gardens, Kew.

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OR VOL. XXII. OF THE ENTIRE WORK.

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M. S del et lith.

Rubus lasiostylus, Focke.

Plate 1951.

RUBUS LASIOSTYLUS, *Focke*.

Rosaceæ. Tribe Rubeæ.

R. lasiostylus, *Focke* (*sp. nov.*); caulibus teretibus pruinosis glabris foliiferis aculeis subulatis sæpius gracilibus patentibus v. leviter uncinatis instructis, foliis 5–3-nato-pinnatis, foliolis grosse et inæqualiter duplicato-serratis supra glabriusculis subtus tomento adpresso albidis, terminale multo majore lato subcordato sæpe trilobato acuminato, stipulis oblique lanceolatis acutis submembranaceis, cymis quasi terminalibus breviter pedunculatis v. sessilibus pauci-(2–6)-floris, pedicellis longiusculis fructu decurvis, petalis calyce brevioribus rotundatis breviter unguiculatis deciduis, carpellis numerosis lana densa obtectis, stylis pilosis, endocarpio areolato-rugoso.

Hab. China, Prov. Hupeh, *Dr. A. Henry* (forma typica et *tomentosa*: ramis petiolis pedunculis sepalisque dense tomentosis, District Patung, 5788 A; forma *glabrata*: ramis petiolis pedunculis sepalisque glabratis pruinosis, Districts Chienshih, Fang et Kuei, 5788 et B, C, D, etc.; forma *glandulosa*: foliis ramuli floriferi interdum pinnatis, foliolis minoribus, pedunculis glaudulosis, District Chienshih, 5872).

[*Turiones* teretes aculeis numerosis setoso-subulatis pungentibus instructi. *Folia* 5-nato-pinnatis, cum petiolo, in ramis foliiferis, 10-15 poll. longis, petiolis cum rachide et nervis foliolorum primariis setoso-aculeatis, glabris v. pubescentibus; foliola lateralia breviter petiolata inæquilatera subovata acuta. *Inflorescentia* brevis nutans subcorymbosa aphylla, bracteis sat magnis ovatis subscariosis munita. *Calyx* segmentis ovato-lanceolatis acuminatis, extus tomentosis vel glabris. tubo interdum aculeolato. *Stamina* filamentis filiformibus glabris. *Fructus* globosus $\frac{3}{4}$ poll. diam.

This species is allied to *R. opulifolius*, Bertol., and to *R. hypargyrus*, Edgew.—Dr. W. O. Focke.]

Fig. 1. Petal. 2. Stamen, back and front. 3. Carpel. 4. Fruiting-carpel. *Enlarged.*

M. S. del. et lith.

Rubus chroösepalus, Focke.

Plate 1952.

RUBUS CHROÖSEPALUS, *Focke.*

Rosaceæ. Tribe Rubeæ.

R. chroösepalus, *Focke* (*sp. nov.*), frutex glaber, aculeis sparsis recurvis, foliis simplicibus longe petiolatis rotundato-cordiformibus cuspidatis repandis argute denticulatis, supra glabris subtus albidis, inflorescentia terminalis paniculata ramulis patentibus tomentellis, floribus apetalis parvis brevissime pedicellatis, calycibus fructiferis accrescentibus lobis intus margine excepto glabris, carpellis glabris nigrescentibus.

Hab. China, Prov. Hupeh, District of Patung, *Dr. A. Henry* (5505, 7291).

[*Ramus* floriferus glaber brunneus aculeis recurvis foliisque simplicibus sat longe petiolatis instructus. *Stipulæ* parvæ lanceolatæ caducæ; gemmarum axillarium loco fasciculi pilorum videntur. *Petioli* $1\frac{1}{4}$–$2\frac{1}{2}$ poll. longi glabri parce aculeati. *Folia* 3–5 poll. longa, $2\frac{1}{2}$–5 poll. lata, cordato-subrotunda cuspidata, margine subrepanda, argutissime sed non profunde mucronato-dentata, supra glabra glandulis sessilibus punctata, subtus albida et in nervis parce pilosa, foliis Tiliarum similia. *Inflorescentia* 6–9 poll. longa e racemis composita aphylla inermis apicem versus decrescens, ramuli inferiores sat longi 2–5 poll. longi patentes sericeo-tomentosi racemosi, superiores breves pauciflori; bracteæ lanceolatæ caducæ; pedicelli brevissimi. *Flores* parvi 5–6 lin. lati; cupula hypocrateriformis, cum sepalis ovatis mucronatis, sericeo- albido-tomentosa. *Calyx* fructiferus $\frac{3}{4}$ poll. latus, sepalorum facies interna margine hirsuto albido cincta basin versus glaberrima nitens et atrorubens, ut videtur. *Petala* nulla. *Stamina* numerosa; receptaculum hirsutissimum. *Carpella* c. 12–15, glabra; styli elongati stamina superantes.

The leaves of this species resemble very much those of *Tilia alba*. The glandular tissue of the disk seems to extend over a great part of the inner surface of the sepals, and, being coloured in compensation for the want of petals, it must be very attractive for flies and other small insects. The plant appears to be allied to *R. tephrodes*, Hance.—Dr. W. O. Focke.]

Fig. 1. Fragment of inflorescence at time of flowering. 2. Bract. 3. Stamen, back and front. 4. Carpel. 5. Immature fruit. *Enlarged* (*except 5*).

Dr. Henry's collection includes, besides the two foregoing and others previously figured :—

R. sozostylus, *Focke* (*sp. nov.*). *Rami* lignosi teretes aculeis minutis scabriusculi et hinc inde tomenti vestigiis vestiti ; folia decidua esse videntur. *Ramuli* hornotini palmares foliis paucis instructi tomentosi, in parte inferiore foliifera vix aculeati, inflorescentia terminati. *Folia* longe petiolata membranacea e basi lata obiter cordata palmato-quinquenervia quinqueloba, suprema triloba, lobo intermedio producto acutissimo, margine acute serrata, supra glabra, subtus flavescenti-albida. *Stipulæ* caulinæ lanceolatæ caducæ. *Inflorescentia* racemosa c. 8-12-flora aphylla ; bracteæ lanceolatæ ; rachis cum pedunculis dense tomentosa aculeolis crebris instructa. *Cupula* hypocrateriformis cum sepalis triangulari-lanceolatis mucronatis in fructu patulis tomento denso sericeo flavescente vestita. *Sepala* interne hirta basin versus glabrescentia. *Petala* ?. *Filamenta* subulata pilosa, verosimile rubra. *Torus* hirsutus. *Carpella* numerosa ; styli elongati in fructu persistentes tota longitudine pilis suberectis hirti.

Longitudo ramorum fructiferorum 8–15, inflorescentiæ fructiferæ 5–8, pedunculorum 1·5–2·0, petiolorum folii intermedii 6, foliorum 9–10, lobi intermedii folior. 6 cm ; latit. folior. 8·0–8·5 cm ; diameter calycis fructiferi 2 cm.

Hab. China, Prov. Hupeh, *Dr. A. Henry* (coll. 5005).

This plant is nearly allied to *R. Henryi* Hemsl. et Kntze., which is readily distinguished by its trident-like leaves of three narrow nearly equal lobes, by its glandular calyx, and by the small number of carpels. The style is not deciduous in *R. sozostylus* and in some other Chinese *Rubi*.

R. bambusarum, *Focke* (*sp. nov.*). *Rami* lignosi scandentes aculeis parvis recurvis muniti. *Folia* perennantia digitato-ternata ; stipulæ lanceolatæ scariosæ caducæ ; petioli breves lanato-puberuli ; foliola fere æqualia brevissime petiolulata coriacea anguste lanceolata utrinque attenuata obiter argute serrata, supra glabra, subtus tomento adpresso albicantia. *Rami* florentes lanuginoso-pilosi, folia pauca gerentia inferne inermes ; inflorescentiæ racemosæ rachis cum pedunculis tomentosa aculeolataque. *Bracteæ* ovato-lanceolatæ scariosæ. *Cupula* pelviformis cum sepalis longe mucronatis sericeo-hirsuta ; sepala in flore et fructu reflexa. *Petala* parva hirta purpurea. *Torus* hirsutus. *Stamina* numerosa pilosa stylis breviora. *Stylorum* pars inferior hirsuta, superior elongata glabra. *Fructus* niger.

Longitudo petiolorum c. 2, foliolorum 6 10 (latit. 1-2), pedunculorum 1–2 cm. ; diameter florum c. 1–5 cm.

Hab. China, Prov. Hupeh. Frequenter obvius in montibus in alt. 4,000–6,000 pedum, præcipue in bambusarum silvis, *Dr. A. Henry* (coll. n. 5618).

This species also resembles very much *R. Henryi*, Hemsl. et Kntze., which has, however, tripartite, not ternate, leaves ; besides that its

calyx is glandular and the number of carpels seems to be smaller. *R. bambusarum* is an evergreen climber, adapted by its narrow leaflets to catch the scattered beams of light in the bamboo-woods. The leaves are dried and used as tea (*Henry*).

Rubus flosculosus, *Focke* (*sp. nov.*). *Caulis* lignosus teres aculeis falcatis sparsis munitus. *Rami* floriferi palmares vel pedales brunnei pubescentes aculeis brevibus raris instructis. *Folia* imparipinnata bijuga vel trijuga; stipulæ basales parvæ subulatæ, foliola parva duplicato-serrata, supra parce pilosa, subtus albo-tomentosa, terminale lanceolato-rhombeum vel elliptico-rhombeum, lateralia similia minora vix petiolulata. *Inflorescentia* terminalis elongata basi foliifera superne racemosa, ramuli inferiores pauciflori; pedunculi cum rachide hirti inermes *Flores* parvi. *Sepala* ovata mucronata tomentosa in fructu patentia. *Petala* unguiculata sepalis paullulum longiora purpurea. *Stamina* numerosa stylis fere æquilonga. *Ovaria* dense hirta, styli glabri. *Fructus* immaturi fragis parvulis similes rubri, maturi nigri.

Longit. ramor. florent. 15–25, foliorum cum petiolo 8–5, folioli terminalis 4–5 cm.; latitudo folioli term. 1·0–2·5 cm.; diameter floris 0·5 cm.

Hab. China, Prov. Hupeh, *Dr. A. Henry* (5853, 6495, 7321).

A pretty species, remarkable for its very small purplish flowers. It is allied to *R. coreanus*.

R. pileatus, *Focke* (*sp. nov.*). *Caules* lignosi scandentes c. 4 pedes alti glabri aculeis sparsis brevibus e basi lata apice falcatis instructi. *Ramuli* ex axillis foliorum anni præcedentis brevissimi, ad basin squamis scariosis muniti, foliis paucis (2 3) instructi et sæpe floribus nonnullis terminati; ramulorum folia quinato-pinnata; stipulæ e petioli basi ortæ lineari-lanceolatæ scariosæ; petioli longi supra sulcati, parce pilosiusculi, aculeis paucis parvis instructi. *Foliola* argute duplicato-serrata utrinque viridia, supra glabra, subtus in nervis puberula; nervis secundariis subparallelis utrinque c. 10–12; foliolum terminale ellipticum acuminatum basin versus subcuneatum, lateralia parum minora brevissime petiolulata. *Flores* 2–4 in ramulo terminales; pedunculi glabri parce aculeolati; sepala lanceolata utrinque tomentella in fructu reflexa. *Filamenta* subulata. *Carpella* cum basi stylorum lana densa alba obducta. *Carpophorum* siccum convexum stipite crasso paullulum elevatum cum drupeolis rubris lana alba stylorumque fasciculo coronatis fungi fere pileum æmulans. *Fructus* grati edules; drupeolæ inferne glabræ; putamen rugosum.

Longitudo foliorum cum petiolo 30–36, petiolorum 8–10, folioli terminalis 5–9 (latit. 4·0–4·5), ramuli fructiferi 3–4, pedunculorum 2 cm.; diameter fructus 2·5 cm.

Hab. China, Prov. Hupeh. *Dr. A. Henry* (coll. No. 6849).

The very short branches furnished generally with two large pinnate leaves and the curious fruits 'shaped like a mushroom' (*A. Henry*) are very remarkable. I know no species which I can regard as closely allied to this one; perhaps it may belong to the group of *R. pungens*, Cambess.

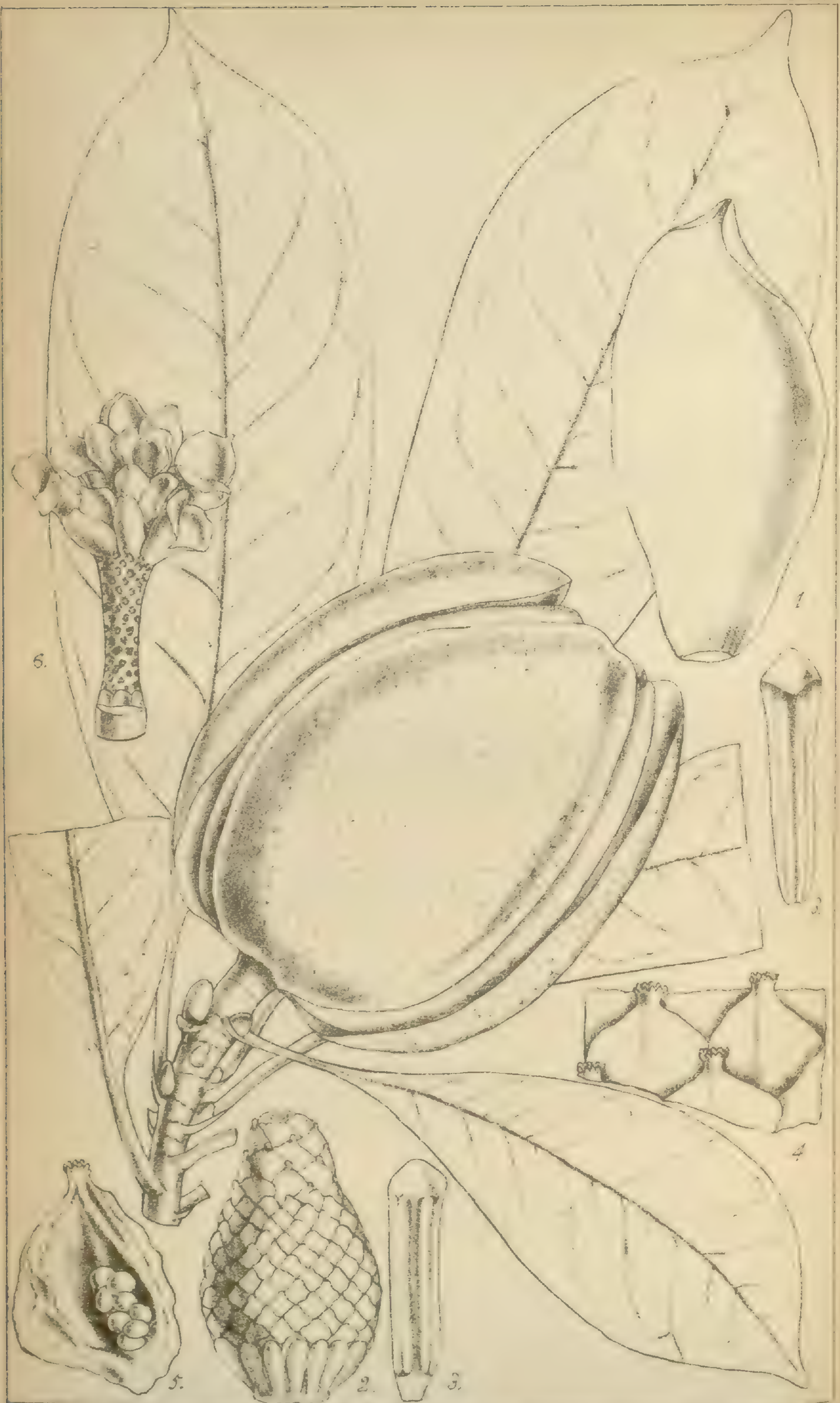
R. chiliadenus, *Focke* (*sp. nov.*). *Ramuli* florentes hirti glandulis stipitatis inæqualibus longis atropurpureis aculeisque raris e basi latissima recurvis muniti. *Folia* ternata et quinato-pinnata; stipulæ e basi petioli enatæ filiformes hirsutæ; petioli hirti glandulosique parce aculeati; foliola inæqualiter grosse et duplicato-serrata, utrinque viridia et hirta, supra glandulis stipitatis sparsis, subtus glandulis sessilibus instructa; foliolum terminale in foliis ternatis sæpe cordato-ovatum sublobatum, in foliis quinatis ellipticum acuminatum basi truncatum. *Inflorescentia* sat longa inferne sæpe interrupta foliifera, superne racemosa inermis. Rachis cum pedunculis sepalisque hirta glandulisque confertis atropurpurea. *Sepala* ovato-lanceolata acuta in flore patentia. *Petala* sepalis longiora. *Stamina* stylos superantia; filamenta filiformia.

Longitudo foliorum cum petiolis 10–20, folioli terminalis 6–8 (latit. 4–5), pedicellorum 1 cm.; diameter florum c. 1·5 cm.

Hab. China. Prov. Hupeh, *Dr. A. Henry* (coll. No. 6009).

A branchlet of this plant bearing ternate leaves only resembles very much the small European *Glandulosi* of the *Hirtus* group. The scattered broad-based prickles, however, are very different; they are often found opposite to the leaves. *R. chiliadenus* is allied to *R. innominatus*, S. Moore

Besides these new species, the last interesting collection sent by Dr. A. Henry contains several remarkable forms and varieties of other Rubi, and two well-known species, which he has found for the first time in China, viz., the Himalayan *R. Hookeanus*, S. Kurz, and the Japanese *R. peltatus*, Maxim.—Dr. W. O. Focke.]



M.S. del. et lith.

Manglietia Fordiana, Oliv.

Plate 1953.

MANGLIETIA FORDIANA, *Oliv.*

Magnoliaceæ. Tribe Magnolieæ.

M. Fordiana, *Oliv.* (*sp. nov.*), arbor 25-pedalis, glaberrima, foliis coriaceis longiuscule petiolatis oblanceolatis breviter obtusiuscule acuminatis basi in petiolum angustatis, floribus solitariis terminalibus brevissime pedunculatis eburneis, sepalis petalisque carnosis ellipticis obtusis concavis, carpellis 24–30, fructiferis ovoideo-capitatis.

Hab Hong Kong. 'Indigenous near road to Victoria Peak. Only one tree known." *C. Ford.*

Ramuli floriferi teretes glabri $\frac{1}{4}$ poll. diam., cicatricibus stipularum annulati. *Folia* 4–6 poll. longa, $1\frac{1}{2}$–2 poll. lata, subtus leviter reticulata. *Sepala* oblongo-elliptica obtusa concava 2–$2\frac{1}{2}$ poll. longa, $1\frac{1}{4}$–$1\frac{1}{2}$ poll. lata. *Petala* elliptica. *Antheræ* lineares apicem versus leviter dilatatæ carnosæ, connectivum apice obtusum brevissime productum; filamenta brevissima. *Receptaculum* staminiferum $\frac{3}{4}$–1 poll. longum. *Gynœcium* sessile. *Ovula* c. 8, subbiseriata.

This is interesting as the first record of the genus *Manglietia* from China, and as another instance of a species only known to us from solitary, or very few, individual specimens in Hong Kong. Of course we may expect these restricted species to occur in the interior of Southern China.—D. Oliver.

Fig. 1. Petal. 2. Stamens and carpels inserted on receptacle. 3. Detached anther. 4. Carpels, as inserted, seen from outside. 5. Ovary, laid open. 6, Fruiting receptacle. *More or less enlarged.*

M S del et lith.

Eustigma Balansæ, Oliv.

Plate 1954.

EUSTIGMA BALANSÆ, *Oliv.*

HAMAMELIDEÆ.

E. Balansæ, *Oliv.* (*sp. nov.*), arbuscula, ramulis teretibus lenticellatis parce stellato-tomentellis, foliis ellipticis obtusiuscule cuspidatis integris supra opacis obsolete scabriusculis, subtus parce stellato-tomentellis, floribus spicatis subsessilibus, spicis terminalibus v. folio oppositis subsessilibus, bracteis obovatis obtusis v. apiculatis tomentosis bracteolis longioribus.

HAB. Tonkin; forests in the Valley of Lantok, *M. Balansa* (No. 3283).

Arbuscula 20–30-pedalis. *Folia* 3–3½ poll. longa, 1¾–2 poll. lata; petiolus ¼–⅓ poll. longus. *Spica* florifera 1¼–1½ poll. longa. *Calyx* tubo breviter turbinato stellato-tomentoso, segmentis obovato-rotundatis glabris v. apice tomentosis. *Petala* calycis limbo breviora, crassiuscula, cuneata truncata v. retusa unguiculata. *Antheræ* subsessiles, ovoideæ obtusæ inappendiculatæ. *Styli* 2 longe exserti carnosi; stigmata dilatata lobulata intus corrugata. *Capsula* ¾ poll. longa bivalvis, valvis bifidis.

A genus hitherto regarded as monotypic and restricted to Hong Kong. The Tonkin plant of which one excellent specimen is included in the fine distribution of M. Balansa, differs from *E. oblongifolium*, G. & C., in its distinctly spicate flowers and broadly elliptical less coriaceous leaves.—D. OLIVER.

Fig. 1. Flower and bracteoles. 2. Same, calyx-segments and stigmas removed. 3. Anther, side and back views. 4. Vertical section of ovary. *Enlarged.*

Enarmia Jenmani. Oliv.

Plate 1955.

EPERUA JENMANI, *Olic.*

Leguminosæ. Tribe Eucæsalpinieæ.

E. Jenmani, *Oliv.* (*sp. nov.*), glabra, foliolis 4–3-jugis oblongo-ellipticis breviter acuminatis basi rotundatis coriaceis subtus reticulatis, racemis axillaribus v. quasi terminalibus solitariis breviter pedunculatis v. sessilibus sæpe recurvis folio multo brevioribus, floribus congestis, bracteis parvis coriaceis rotundatis v. late ovatis, petalo maximo, ovario glabro, ovulis 2–3.

Hab. British Guiana, various localities, *G. S. Jenman* (Nos. 573, 975, 2154, 3830, 4770).

Arbor 20–80-pedalis. *Folia* 10–16 poll. longa; foliola 4–7 poll. longa, 2–3 poll. lata, basi interdum sub-cordata; petiolulus crassiusculus 2–4 lin. longus. *Stipulæ* oblique ovatæ v. rotundatæ coriaceæ $\frac{1}{3}$–$\frac{3}{4}$ poll. longæ. *Racemi* cum pedunculo floribusque expansis 2–4 poll. longi. *Calyx* segmentis ovali-oblongis $\frac{3}{4}$–1 poll. longis. *Petalum* c. $2\frac{1}{2}$–$3\frac{1}{2}$ poll. longum. *Stamina* tubo coriaceo extus lineatim pubescente; antheræ ellipticæ versatiles. *Ovarium* stipitatum compressum; stylus elongatus glaber gracilis staminibus longioribus æquilongus. *Legumen* (vix maturum) magnum coriaceo-lignosum oblique elliptico-quadratum, extus (in sicco) plus minus transverse rugosum, 5–6 poll. longum, 3–$3\frac{1}{2}$ poll. latum.

I cannot venture to refer this to *E. grandiflora*, Benth. (*Parivoa grandiflora*, Aubl. *Pl. Gui.* 757, t. 303) in Mart. *Fl. Bras.* xv. pt. ii. 226, on account of the laxer and corymbose inflorescence of the latter. It is, no doubt, a nearly allied species, as is also *E. bijuga*, Mart. *E. Jenmani* is known in British Guiana as 'Itoori-wallaba,' according to Mr. Jenman.

The scraped root is used by the Indians for the cure of toothache. The timber is used for the frames of houses, vat staves, paling staves, and shingles for colonial use and exportation.—D. Oliver.

Fig. 1. Stamens. 2. Ovary, laid open. *Enlarged.*

Nauclea sinensis, Oliv.

Plate 1956.

NAUCLEA SINENSIS, *Oliv.*

Rubiaceæ. Tribe Naucleeæ.

N. sinensis, *Oliv.* (*sp. nov.*), glabra, ramis tetragonis v. ultimis acutiuscule 4-angularibus interdum cirrhis rigidis retrorsum uncinatis armatis, foliis membranaceis ellipticis v. ovato-ellipticis breviter acuminatis basi rotundatis breviter petiolatis, stipulis indivisis rotundatis reflexis, pedunculis axillaribus patentibus medio bibracteolatis folio sæpius brevioribus monocephalis, floribus brevissime pedicellatis, calycis lobis oblongis obtusiusculis ovario æquilongis extus hirtellis, corollæ tubo elongato calycis lobis 4-6-plo longiore apice breviter infundibuliforme-dilatato, lobis corollæ obovatis tubo 4–6-plo brevioribus, æstivatione late imbricatis, antheris ovali-oblongis obtusis basi breviter sagittatis filamento longioribus inclusis, stylo elongato filiforme glabro exserto, stigmate clavato.

Hab. China, Prov. Nan-t'o; 'and mountains to the northward,' *Dr. A. Henry* (No. 4501).

Folia 4–5½ poll. longa, 2¼–3 poll lata; petiolus ⅙–⅓ poll. longus. *Pedunculi* 2–3½ poll. longi. *Capitula* florifera c. 1 poll. diam. *Flores* albi.—D. Oliver.

Dr. Henry has obliged us with the following memorandum:—

'This plant is known to the Chinese as *kou-t'êng*, i.e. "hook-creeper"; and is figured in *Chih wu ming*, xxii. 57. The hooks or hardened peduncles, with portions of the stem attached, are used in Chinese medicine, being known at Hankow (from which there is an export of about 20 tons annually) as *kou-p'ien* or *mi-kou*. From these hooks a tincture is prepared with wine. The chief place of production is Hupeh.

'In Japan a drug of the same name occurs, which is identified by Matsumura as *Uncaria rhynchophylla*, Miq.

'There are specimens in the Pharmaceutical Museum of both the Chinese and Japanese drug.'—A. Henry.

Fig. 1. Æstivation of corolla. 2. Flower, detached. 3. Corolla, laid open. 4. Anther, back and front. *Enlarged.*

Blumea balsamifera, D C.

Plate 1957.

BLUMEA BALSAMIFERA, *DC.*

Compositæ. Tribe Inuloideæ.

B. balsamifera, *DC. Prodr.* v. 447, erecta suffruticosa lanato-tomentosa ramis teretibus foliis oblongo-lanceolatis acutis v. acutiusculis basi interdum pinnato-lobatis vel petiolo lobis angustis linearibus appendiculato supra hirtellis villosulisve rugulosis subtus lanato-tomentosis, capitulis cymosis in paniculis interdum corymbiformibus amplis terminalibus dispositis, involucri bracteis gradatim longioribus lineari-subulatis fulvo-pilosis interioribus anguste linearibus floribus subæquilongis, achæniis angulatis, pappo rufescente.—Hook. *Flora of Brit. India*, iii. 270 (with synonymy).

Hab. India, from the Himalaya to Singapore and Indian Archipelago, *various Collectors* ; China, to coast of Formosa, *Wilford.* Hainan.

Caulis basi suffruticoso 5–8-ped. alt. *Folia* inferiora cum petiolo 7–12 poll. longa. *Capitula* $\frac{1}{3}$–$\frac{1}{2}$ poll. lata, bracteis involucri tandem laxis v. plus minus recurvis. *Receptaculum* glabrum leviter tuberculatum. *Fl.* ♀ anguste tubulares ore 2–3-denticulato. *Achænium* anguste columnare angulare parce sericeum v. glabratum ; pappus simplex 1-seriatus corolla fere æquilongus.

We find a place for this common Indian species in 'Icones Plantarum,' chiefly on account of its economic interest as affording a camphor exported from Canton and Hainan of considerable annual value ; moreover, there does not exist any good figure of it. Our plate is from a Formosan specimen. It is doubtless a native of South China, as well as of Hainan, but we have no specimens from thence. We are indebted to Dr. Henry for the subjoined note.—D. Oliver.

'From this is produced in Kwangtung and Hainan the peculiar camphor known to the Chinese as *ngai-jên*, signifying the crude product, and *ngai-p'ien*, the name given to the refined article. The export from the port of Hoihow in Hainan of the crude camphor is about 15,000 lbs. annually. This is refined in Canton, from which there is an annual export of about 10,000 lbs. of *ngai-p'ien*. Hanbury (*Science Notes*, p. 394) gives an account of the camphor, and mentions that the plant in question is well known to emit when bruised a strong odour of camphor, and that in Burmah a crude camphor is extracted from

it. For the physical and chemical properties of this peculiar camphor, see *Pharmaceutical Journal*, ser. 3, vol. iv. pp. 710, 712; and *Neues Repertorium für Pharmacie*, xxiii. p. 325.'—A. Henry.

See also Mr. Thiselton Dyer's paper, 'On some New Economic Products,' in the *Journal of the Linnean Society*, Bot., xx. 414, in which attention is called to the abundance of *Blumea balsamifera* in Burmah.

Fig. 1. Capitulum. 2. Female floret. 3. Disk floret. 4. Seta of pappus. 5. Anthers. 6. Stigma. *Enlarged.*

Ligusticum sinense, Oliv.

'In Japan the name *kao-pên* is applied to *Nothosmyrnium japonicum*, Miq.

'The determination of the umbelliferous plants used in Chinese medicine, which nearly all come from the internal provinces of Hupeh, Szechwan, Shansi, &c., is very difficult; and the attention of travellers ought to be directed to the obtaining of specimens of the plants in fruit with roots attached. There is still considerable doubt regarding the sources of the following drugs of this category:—*pai-chih*, *tang-kuei*, *ch'uan-hsiung*, *tu-huo*, *ch'iang-huo*, *ch'ien-hu*, and *fang-fêng*. These are all exported in enormous quantities from Hankow.'—A. Henry.

Fig. 1. Staminate flower. 2. Fruit, lateral view. 3. Same, dorsal view. 4. Same, commissural face. *Enlarged.*

[*Note.*—Since writing the above I have found specimens of Dr. Henry's No. 4954 from Patung, which I think probably the same species, and undoubtedly a *Ligusticum*, with a plane commissural face to the mericarps, and, on the dorsal side, three rather conspicuous vittæ between the nearly equal ridges. *L. pteridiphyllum*, Franchet, MSS. (*Herb. Delavay*), lately received at Kew, may perhaps be the same.—D. O.]

Plate 1958.

LIGUSTICUM SINENSE, *Oliv.*

Umbelliferæ. Tribe Seselineæ.

L. sinense, *Oliv.* (*sp. nov.*); caule erecto longitudinaliter striato glabro, foliis glabris radicalibus . . . caulinis inferioribus bipinnatipartitis pinnis inferioribus petiolulatis, segmentis ovatis inæqualiter incisis dentatisve dentibus obtusis apiculatis, superioribus subsessilibus, petiolo amplexicaule late vaginante, involucri bracteis anguste linearibus, umbellæ radiis 15–22 scaberulis adscendentibus, involucelli bracteolis angustissimis pedicellis fructiferis brevioribus, fructu late ovoideo lateraliter leviter compresso, commissura profunde sulcato, jugis primariis prominulis, vittis ad valleculas sæpius 3 obscuris, facie commissurali pluribus, carpophoro bipartito.

Hab. China, Prov. Hupeh, District Hsingshan, and Prov. Szechwan, District No-Wushan.—*Dr. A. Henry* (Nos. 6759 A and B).

Herba $2\frac{1}{2}$–4-pedalis. *Folia* deltoidea, caulina inferiora cum petiolo 8–12 poll. longa; segmentis ultimis 1–$1\frac{3}{4}$ poll. longis $\frac{1}{2}$–$\frac{3}{4}$ poll. latis. *Umbellæ* longe pedunculatæ, fructiferæ $2\frac{1}{2}$–4 poll. latæ. *Petala* 1-nervia albida elliptica v. antica obcordata. *Styli* graciles dein refracti fructibus immaturis subæquilongi.

From the characters of the fruit I suspect this plant may be an ally of *Nothosmyrnium japonicum*, Miq. It is not without hesitation that I refer it to *Ligusticum* —D. Oliver.

Dr. Henry favours us with the following note:—

'The root of this plant is dug up in the mountains of Western Hupeh. and is one source of the Chinese drug known as *kao-pên*, which was the name given to the plant by the drug collectors in the mountains of Hupeh. It seems, however, that the drug is exported from Hankow (5 tons annually) under the name *hsi-hsiung*, so-called from the resemblance of the root to another drug of much greater importance, *ch'uan-hsiung*. In the Customs *List of Chinese Medicines*, p. 342, we find the entry *kao-pên* or *hsi-hsuing*, an article of export from Canton of about 3 tons annually. Whether this product of Kwangtung and Kwangsi is the same as the Hupeh plant it is impossible for me at present to determine.

Astragalus Hemsleyi, Oliv.

Plate 1959.

ASTRAGALUS HENRYI, *Oliv.*

Leguminosæ. Tribe Galegeæ.

Astragalus (**Cenantrum**) **Henryi**, *Oliv.* (*sp. nov.*). Herba erecta e basi lignosa 1½-pedalis, caule gracile glabro v. parce villosulo, stipulis ovato-lanceolatis v. lanceolatis acutatis scarioso-membranaceis marcescentibus, foliolis ellipticis v. oblongo-ellipticis obtusis mucronulatis subtus pallidioribus parce villosulis, racemis (fructiferis) laxiusculis in axillis superioribus v. quasi-terminalibus interdum subpaniculatis, pedicellis gracilibus pilosulis calycem æquantibus, calyce tubuloso v. campanulato-tubuloso oblique truncato ore subintegro dentibus minutissimis, parce appresse setuloso-pilosulo, legumine sutura carinali haud intrusa stipitato (stipite calyce interdum fere duplo longiore) elliptico v. ovato-elliptico apice apiculato sæpius 1-spermo, valvis glabris lævibus obscure et oblique transversim venulosis.

Hab. China, Prov. Hupeh, Fang District, *Dr. A. Henry* (No. 6902).

Caulis subteres v. obscure angulatus. *Folia* sæpius 5-foliolata, 2½–4 poll. longa; foliola 1–1½ poll. longa, ½–⅔ poll. lata, lateralia brevissime petiolulata v. subsessilia. *Racemi* fructiferi 2–3 poll. longi. *Legumen* 2- vel sæpius 1-spermum, ½ poll. longum, ¼–⅓ poll. latum.

Of this plant Dr. Henry was able to send us only fruiting specimens, which, however, abundantly suffice to establish its specific distinctness. It is an important drug-plant of Central China, known as the *huang-ch'i* in Szechwan and Hupeh. The species of *Astragalus* named *A. Hoantchy* by Mons. Franchet is very distinct from this plant, having a much introflexed suture in the legume, leaflets in 8–12 pairs, &c. We are indebted to the kind offices of this distinguished botanist for specimens of this plant, as also of Bunge's *A. mongholicus*, the latter another species of the section *Cenantrum*, to which, as Mons. Franchet pointed out to me, our plant belongs. It is allied to *A. Henryi*, but the leaflets are very small and numerous, the legumes larger, with seeds varying to six or more.—D. Oliver.

Dr. Henry has kindly favoured us with the subjoined memorandum:—

'*Huang-ch'i* is the generic name of an important Chinese drug, of which there are several kinds, doubtless afforded by different plants.

The root is the part used. From a publication of the Chinese Customs we learn that the export annually from the various treaty ports is as follows (the local names are given):—

'*T'iao-ch'i*. 760 piculs from Newchwang, produced in Shantung and Manchuria.

'Huang-ch'i, 3,500 piculs from Tientsin, produced in Chili (and Mongolia).

'Huang ch'i, *pai-ch'i*, and *hung-ch'i*, 2,600 piculs from Ichang and Hankow, produced in Szechwan, Hupeh, and Shensi.

'Other local names used are *chin-ch'i*, *ch'uan-ch'i*, *hsi-ch'i*, *hsi-fêu-ch'i*, and *pei-ch'i*.

'M. Franchet (*Pl. David.* i. p. 86) has described as a source of the drug, *Astragalus Hoantchy*, collected by Père David in Mongolia. This is perhaps the source of the Pei-ch'i and T'iao-ch'i, exported from Newchwang and Tientsin. He also (*Pl. David.* ii. p. 31) describes *Astragalus mongolensis*, "a plant used in Chinese medicine." This Thibetan plant may be one of the sources of the Szechwan drug.

'During my trip of 1888 I found in the mountains of Hupeh the plant, 6902, which is the source of the drug in Hupeh and Eastern Szechwan, and perhaps in Shensi.

'Chinese books acknowledge the existence of three or four kinds of the drug. One kind is figured in *Chih wu ming*, vii. 3.

'The *Customs Trade Reports*, 1869, p. 59, has the following:—"The dried root of an herbaceous plant cultivated in Shansi, which grows 2 or 3 feet high. In early autumn it bears a yellow and purple flower, and the seeds are contained in a pod about an inch long. The root is 6 or 8 inches long, yellowish white in colour, with a thick rind and a pithy centre."

'In Japan, *huang-ch'i* is furnished by *Astragalus reflexistipulus*, Miq. Other kinds of the drug in Japan are from *A. adsurgens* and *Hedysarum esculentum*, Ledeb.

'Bretschneider, *Early Researches*, p. 148, says that *huang-ch'i* at Peking is *Sophora flavescens*, Ait. There must be some error here, as the root of this plant is a very different drug, "*k'u-shên*," which is used in veterinary practice.'—A. Henry.

Fig 1. Fruit, persistent calyx, and pedicel. 2. Fruit, laid open. *Enlarged.*

M.S. del. et lith.

Mezoneuron sinense, Hemsl.

Plate 1960.

MEZONEURON SINENSE, *Hemsl.*

Leguminosæ. Tribe Eucæsalpinieæ.

M. sinense, *Hemsl. in Journ. Linn. Soc.* xxiii. 204; ramis foliorum rachidibusque aculeatis aculeis rigidis recurvis, foliis amplis pinnis 3 4-jugis foliolis sæpius 3-jugis brevissime petiolulatis coriaceis ovato-oblongis v. oblongo-ellipticis obtusiusculis mucronulatis v. acutis, glabris v. costa subtus basin versus parce hirtella, subtus pallidioribus, racemis multifloris divergentibus paniculatis paniculis amplis terminalibus v. axillaribus plus minus ferrugineo-hirtellis pedicellis patentibus flore subæquilongis, calycis lobis ovali-oblongis obtusis lobo infimo cymbiforme apice subgaleato, petalo postico minore cum tuberculo piloso ad basin laminæ, filamentis inferne lanuginosis, ovario subsessile ferrugineo-lanuginoso, stylo glabro, legumine rigide coriaceo subsessile oblique elliptico v. fere semi-orbiculare oblique apiculato, sutura ventrali angustissime alata.

Hab. China, Prov. Hupeh, Ichang and Nan-t'o, *Dr. A. Henry* (Nos. 1122, 3113, 3416, 3819, 4629; and var. *parvifolium*, Hemsl. 2238).

Frutex scandens v. prostratus. *Folia* ad $1\frac{1}{2}$ ped. longa; foliola $2\frac{1}{2}$–4 poll. longa. *Flores* lutei. *Legumen* $1\frac{1}{2}$–2 poll. longum, 1 poll. latum.

Mr. Hemsley points out the resemblance of the legume to that of the Australian *M. brachycarpum*, Benth, these species differing from their congeners in this particular.—D. Oliver.

Fig. 1. Bud. 2. Vexillum. 3 and 4. Lateral and anterior petals. 5. Stamens. 6. Pistil. *Enlarged.*

M. S. del. et lith.

Davidia involucrata, Baill.

Plate 1961.

DAVIDIA INVOLUCRATA, *Baill.*

Cornaceæ. Tribe, Nysseæ.

D. involucrata, *H. Baill. Adansonia*, x. 115, *spec. fructiferum*; fructu drupaceo obovoideo v. ellipsoideo brunneo v. rubiginoso læviusculo lenticellato-punctato apice depressiusculo, mesocarpio granuloso-crustaceo, endocarpio osseo longitudinaliter 15–25-sulcato sæpius 3–5-spermo, seminibus solitariis pendulis albuminosis, albumine carnoso, embryone albumine subæquali recto, cotyledonibus oblongis radicula paullo longioribus.

Hab. Tibet, Prov. Moupine, *David*; China, Prov. Szechwan; District of South Wushan, *Dr. Henry* (No. 5577; a solitary tree seen during a six months' excursion).

This very remarkable tree has been so carefully described by Professor Baillon, and an excellent plate given by M. Franchet in his *Plantæ Davidianæ*, part ii. tab. 10, that we restrict our plate and description to the fruiting specimens sent to us by Dr. A. Henry, the first, so far as I am aware, that have reached Europe, or at any rate that have been described and figured. With regard to the affinity of the genus, I quite agree with Professor Baillon in regarding it as an ally of *Nyssa*, though I differ from him in his transfer of *Nysseæ* to *Combretaceæ*. Now that the group has been strengthened by the addition of the curious Tibetan genus *Camptotheca* of Decaisne, it may become desirable to give the group ordinal value. The fruit is about $1\frac{1}{4}$ in. long by 1 in. in diameter. The outer layer of the pericarp presents macroscopically the appearance of a hard 'granular' intermixture of white minute sclerenchymatous nodules with a reddish-brown apparently resinous matrix. The sulcation of the thick bony endocarp, in which usually all but three or four of the cells are aborted, recalls the similar condition in some species of *Nyssa*. From the conspicuous areolation of the receptacle of the inflorescence after the fall of the stamens and the circular disposition of the staminal cicatrices upon each areole, I cannot but think the inflorescence is a capitulum of closely crowded achlamydeous male flowers with one obliquely lateral female one. *Davidia* is mentioned by l'Abbé David in the sketch of his travels prefixed to M. Franchet's '*Plantæ Davidianæ*,' pt. i. p. 9, under the specific name of *tibetana*.

Davidia is a tree almost deserving a special mission to Western China with a view to its introduction to European gardens. Dr. Henry describes it as 30 feet in height; 'the large white bracts, mingled with the green leaves of the tree, give it an extraordinary and beautiful appearance.'—D. Oliver.

Fig. 1. Apex of peduncle after fall of the staminate flowers. 2. Transverse section of fruit. 3. Embryo. 1 *and* 3 *enlarged.*

M. Stiel et lith.

Gentiana Herrediana Raim.

Plate 1962.

GENTIANA HERREDIANA, *Raim.*

Gentianaceæ.

G. Herrediana, *Raimondi in Weddell, Chloris Andina*, ii. 309 (*ex descriptione*), maxima speciosissima glaberrima, multiflora, caule erecto inferne folioso, foliis radicalibus . . ., foliis caulinis inferioribus oppositis (ternisve) basi connatis oblongo-lanceolatis acuminatis margine lævibus 7–15-nerviis, foliis superioribus bracteisque ovato-lanceolatis, inflorescentia ampla multiflora laxe pyramidali, floribus magnis 'longe pedicellatis, aliis ex axillis ipsis foliorum caulinorum nascentibus, aliis ad apicem ramulorum lateralium subumbellatis,' calyce herbaceo 5-fido, laciniis ovato-lanceolatis acutis, corolla calyce duplo longiore (purpurea) subcampanulata, segmentis late ellipticis obtusis obscure denticulato-erosis, sinubus inappendiculatis.

Hab. Peru, Cordillera of Muña, 12,000–13,000 feet, *Mr. Pearce*.

Caulis 1½–3-pedalis teres. *Folia* caulina inferiora 4–6 poll. longa, superiora 2–3 poll. longa. *Flores* 1¾–2 poll. longi. *Antheræ* oblongæ dorsifixæ incumbentes; filamenta complanata anguste linearia glabra, corolla breviora, prope basin tubi inserta. *Ovarium* anguste oblongum sursum angustatum; stigma subsessile bifidum, lobis ovatis obtusis.

Dr. Weddell's description of this fine species was based on fragmentary specimens sent to him by Professor Raimondi of Lima, collected in the Cordillera of the Province of Pataz, at the highest point of the route between Chillo and Buldibuyo. But a solitary specimen was found. In his '*Chloris Andina*' Dr. Weddell enumerates nearly sixty species of *Gentiana*, of which he considers this 'la plus belle du genre peut-être.' I feel a little uncertainty as to my identification of Mr. Pearce's specimen with Dr. Weddell's description of Raimondi's plant, because he says the leaves are free at the base; but the general correspondence is so close that I do not think it would be prudent to describe it as new.—D. Oliver.

Fig. 1. Anther, back and front. 2. Pistil.

M.s del et lith

Alpinia Rafflesiana, Wall.

Plate 1963.

ALPINIA RAFFLESIANA, *Wall.*

Scitamineæ. Tribe Zingibereæ.

A. Rafflesiana, *Wall. Cat.* No. 6575; caule foliifero elongato, foliis lanceolatis subtus pubescentibus, vaginis latis apice truncatis, floribus in capitulum terminalem subsessilem congestis, rachide piloso, bracteis ovatis, calyce infundibulari dentibus parvis latis, corollæ segmentis lineari-oblongis tubo subcylindrico æquilongis, labello late ovato conduplicato basi auriculato, stamine arcuato.

Hab. Malay Peninsula; Goping, *King's Collector*; Penang, *Porter*; Malacca, *Griffith*, *Maingay*; Singapore, *Finlayson*, *Cuming* (2400), *Ridley*.

Caulis foliatus 5–6-pedalis. *Folia* pedalia et ultra. *Calyx* 5–6 lin. longus. *Corollæ* segmenta 6–7 lin. longa. *Labellum* luteo-rubrum 1 poll. longum et latum.

This fine plant has been long known, and has received several names in manuscript, but has never been described. I believe that a plant which has been widely spread in gardens under the name of *Alpinia vittata* is a variety of the same species with variegated leaves.—J. G. Baker.

Fig. 1. Labellum. 2. Anther. 3. Pistil. 4. Stigma. *Enlarged.*

M. S. del. et lith.

Nyssa sinensis, Oliv.

Plate 1964.

NYSSA SINENSIS, *Oliv.*

Cornaceæ. Tribe Nysseæ.

N. sinensis, *Oliv.* (*sp. nov.*). Arbuscula (20-pedalis), foliis petiolatis ovato- v. oblongo-ellipticis breviter acuminatis basi plus minus rotundatis integris membranaceis supra glabris subtus præcipue in costa parce pilosis v. glabratis, pedunculis gracilibus axillaribus v. sæpius in axillis squamarum delapsarum solitariis, pedicellis apicem versus umbellatim v. breviter racemosim congestis, fl. ♂ : calyce minuto, petalis deciduis anguste oblongis filamentis brevioribus, staminibus 5–10 circum discum carnosulum dispositis, fl. ♀ : basi minutissime bracteolatis pedicellatis ovario glabro v. basi pilosulo.

Hab. China, Prov. Hupeh, Districts of Chienshih and Changlo (Nos. 5832, 6273), ***Dr A. Henry.***

Folia 4–6 poll. longa, $1\frac{3}{4}$–$2\frac{1}{4}$ poll. lata; petiolus $\frac{1}{2}$–$\frac{3}{4}$ poll. longus, sæpius parce pilosulus. Pedunculus $1\frac{1}{2}$–$2\frac{1}{2}$ poll. longus, fl. ♀ sæpius 3–5-florus, fl. ♂ 10–15-florus.

Having been previously discovered in the Himalaya, this genus, formerly supposed to be restricted to the Eastern States of North America, was sure to turn up in China. This species differs from its nearest allies in the pedicellate ovaries. I have not seen the fruit.—D. Oliver.

Fig. 1. Staminate flower. 2. Ovary, after flowering, and pedicel. 3. Longitudinal section of ovary. *Enlarged.*

Cyanastrum cordifolium Oliv

Plate 1965.

CYANASTRUM CORDIFOLIUM, *Oliv.*

Hæmodoraceæ. Tribe Conantheræ.

Cyanastrum, *Oliv.* (*nov. gen.*). *Perianthium* 6-partitum, segmentis ovali-oblongis longitudinaliter venosis æqualibus patentibus basi, breviter connatis. *Stamina* 6 basi segmentorum perianthii inserta, æqualia et omnia perfecta ; filamenta filiformia glabra ; antheræ anguste lineares basifixæ, basi bidentatæ, apice poris dehiscentes. Ovarium semi-inferum, basi tubo perianthii adnatum, trilobum triloculare, loculis biovulatis ; ovula erecta anatropa ; stylus filiformis centralis staminibus æquilongus ; stigma minute tridentatum. *Fructus* . . .—Cormi *monophylli superpositi depresso-globosi nudi læves.* Folium *longe petiolatum cordiforme acutum v. obtusiusculum utrinque curvatim nervosum, venulis ultimis transversis subparallelis, membranaceum glabrum.* Scapus *solitarius pauci-* (1–4-) *florus, inferne vaginatus, vaginis membranaceis longitudinaliter nervosis.* Flores *breviter racemosi pedicellati bracteati cærulei ; bracteæ membranaceæ pedicello* 2–4-*plo longiores ; pedicelli supra bracteam sæpius plus minus adnati.*

Hab.—West Tropical Africa, Sierra d. Crystal, and Ambas Bay, *Mann* ; Camaroons, near the shore, *Kalbreyer* ; Yoruba Expedition, *Millson.*

C. cordifolium, *Oliv.* (*sp. unica*). *Cormus* $\frac{1}{2}$–$\frac{3}{4}$ poll. diam. *Folia* $2\frac{1}{2}$–$4\frac{1}{2}$ poll. longa, sinu 1–2 poll. prof. ; petiolus 6-10 poll. longus. *Scapus* 2–6 poll. longus ; vaginis vacuis 1–$1\frac{1}{2}$ poll. longus. *Flores* $\frac{3}{4}$ poll. diam.

Of this interesting new type of Hæmodoraceæ we have recently received good specimens, collected by Mr. Alvan Millson, through the good offices of H.E. Sir A. Moloney, Governor of Lagos, which enable us to figure and describe it. Ripe fruit is still a desideratum, and seeds or corms would be a welcome addition to our cultivated stove plants. In the absence of inflorescence, the leaf suggests that of some Aroids or some cordiform-leaved Commelynacea, but analysis of the flowers leaves little doubt of its near affinity with the South African genus *Cyanella.* We have scapes only of probably the same species sent us by Mr. H. H. Johnston from between Lakes Tanganyika and Nyassa at an elevation of about 5,000 feet ; but in these specimens the flowers vary in number to 7.

Cyanastrum of Cassini is reduced to *Volutarella.*—D. Oliver.

Fig. 1. Portion of perianth, showing insertion of stamens. 2. Anther, back and front. 3. Pistil. 4. Vertical section of ovary. *Enlarged.*

M. S. del. et lith.

Codonopsis Tangshen, Oliv.

Plate 1966.

CODONOPSIS TANGSHEN, *Oliv.*

Campanulaceæ. Tribe Campanuleæ.

C. Tangshen, *Oliv.* (*sp. nov.*); volubilis caulibus (ad 10 ped. longis) gracilibus glabratis v. juxta nodos parce setuloso-pilosulis, foliis petiolatis ovato-lanceolatis obtusiusculis sinuato- v. crenato-dentatis supra parce pubescentibus subtus glaucescentibus minute setuloso-pubescentibus, pedunculis extra axillaribus v. folio oppositis, calyce partito, segmentis ovato- v. oblongo-lanceolatis herbaceis, corolla viridescente intus prope basin purpureo notato campanulata breviter 5-fida calyce duplo longiore, segmentis deltoideo-ovatis, basi ovario adnata, capsula subglobosa vertice intra lobos dehiscente, calyce fructifero deflexo.

Hab. China, Prov. Hupeh, Districts of Hsingshan and South Patung (No. 6468).—*Dr. A. Henry.*

Folia $1\frac{1}{2}$–$2\frac{1}{2}$ poll. longa, $\frac{3}{4}$–$1\frac{1}{4}$ poll. lata. *Pedunculi* sæpius 1–2 poll. longi. *Flores* $1\frac{1}{2}$ poll. longi. *Fructus* 1 poll. diam.

Dr. Henry, who has favoured us with the following note on this plant, says, 'The root, when broken, emits a white sticky juice, and with the leaves, &c., has a peculiar odour.'—D. Oliver.

'This (the *t'ang-shên*) is a very important Chinese drug, which is used by the poor as a substitute for the costly ginseng. The name signifies "ginseng from the district of Shang-t'ang in Shansi;" but the drug is now produced in the different provinces of Hupeh, Szechwan, Shensi, and Shansi.

'1. We find a kind exported from Tientsin, distinguished as Lu-t'ang (meaning *t'ang-shên*, from the Lu-an prefecture in Shansi). This is perhaps the root of *Campanumœa pilosula*, Fr., which Père David collected near Peking, and noted the use of the root as a valuable Chinese remedy (*Plantæ Davidianæ*, i. 193).

'2. Ichang and Hankow are the other ports from which the drug is exported—to the amount of 500 tons annually—the provinces of production being Hupeh, Szechwan, and Shensi.

'In the Fang District of Hupeh I collected in the mountains three species of *Codonopsis* or *Campanumœa*; of these, my No. 6651 was not utilised as a drug. The chief source of the *t'ang-shên* was my No. 6468,

large quantities of the root of the wild-growing plants being everywhere in the mountains dug up. The root of 6527 (identified as *Codonopsis lanceolata*, B. & Hk. f.) was also said to be used; but it is much inferior in quality, having a disagreeable odour, and commands a very low price. I am inclined to think, then, that most of the *t'ang-shên* exported from Hankow and Ichang is the root of my 6468. There are different qualities of the drug in the market, and some of these may be from 6527, and possibly other species.

'There is a drug, *ming-t'ang*, produced in Anhwei (export from Wuku 60 tons yearly) and in Kiangsu (export from Chinkiang of 16 tons annually), but specimens of the plant producing it have not been obtained. It will probably turn out to be an *Adenophora*.'—A. Henry.

Fig. 1. Flower, after removal of calyx-segments and corolla.

M S del. et lith

Codonopsis Henryi, Oliv.

Plate 1967.

CODONOPSIS HENRYI, *Oliv.*

Campanulaceæ. Tribe Campanuleæ.

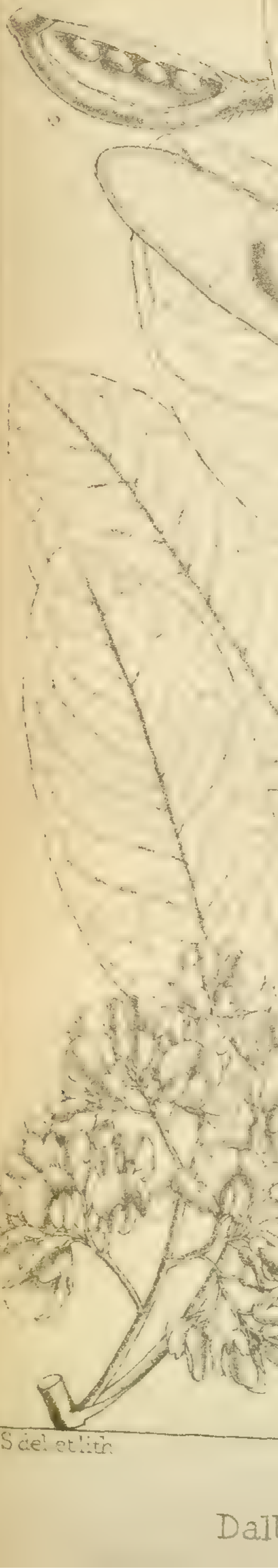
C. Henryi, *Oliv.* (*sp. nov.*); caule volubili glabrato, foliis ovato-lanceolatis acuminatis dentatis membranaceis supra minute et parce setuloso-pubescentibus subtus pallidioribus minute pubescentibus, pedunculis **brevibus** axillaribus sæpius bi(–4)-bracteatis bracteis foliaceis foliis subæquilongis, calycis tubo hemisphærico ovario adnato segmentis lanceolatis **reflexis** temp. florifero tubo longioribus, corolla campanulata breviter 5-fida albida intus inferne purpureo notata, ovario apice libero, stigmate 3-lobo lobis ovatis obtusis.

Hab. China, Prov. Hupeh, Fang District, *Dr. A. Henry* (No. 6651).

Folia $2\frac{1}{2}$–4(–5) poll. longa, 1–2 poll. lata; petiolus $\frac{1}{6}$–$\frac{1}{2}$ poll. longus.

I have not seen the fruit.—D. Oliver.

Fig. 1. Flower, after removal of calyx-segments and corolla. *Enlarged.*



M.S del. et lith.

Dalbergia hupeana, Hance.

Plate 1968.

DALBERGIA HUPEANA, *Hance.*

Leguminosæ. Tribe Dalbergieæ.

D. (**Dalbergaria**) **hupeana**, *Hance in Journ. Bot.* 1882, p. 5; foliolis 9 (7–11) oblongo-ellipticis utrinque obtusis apice sæpius emarginatis supra obscure hirtellis nervis secundariis sæpius prominulis subtus pallidioribus parce pubescentibus, paniculis multifloris terminalibus parce ferrugineo-hirtellis floribus congestis pedicellis calyce sæpius brevioribus, calycis labio postico breviter obtuse bilobo lobis latis ovatis, labio antico longiore tubo æquilongo cymbiforme, vexillo rotundato, staminibus isadelphis, ovario stipitato glabrato 3–5-ovulato, legumine tenuiter coriaceo oblongo 1–2(–4)-spermo.

Hab. China, Prov. Hupeh, Ichang, and immediate neighbourhood, *Watters, Dr. A. Henry*; Nan-t'o and mountains to northward, *Dr. A. Henry* (Nos. 3112, 3670, 4128, 4558); Prov. Chekiang, Ningpo, *Cooper, Oldham*; Prov. Kiangsu, Shanghai, *Carles, Faber*; Prov. Szechwan, *Faber.*

Arbor 20–40-pedalis. *Folia* (in ramulis floriferis) 6–10 poll. longa; foliola $1\frac{1}{2}$–3 poll. longa; petiolulus $\frac{1}{6}$–$\frac{1}{4}$ poll longus. *Flores* albidi v. flavescentes 3 lin. longi. *Calyx* campanulatus parce ferrugineo-sericeus. *Vexillum* breviter unguiculatum inappendiculatum.

It is very nearly allied to *D. assamica*, Benth.; but in this species the lobes of the upper lip of the calyx are broadly cuspidate or acute; in *D. hupeana* they are quite rotundate.—D. Oliver.

Dr. Henry supplies the following note on this valuable timber-tree:—

'*Dalbergia hupeana*, Hance, is the *t'an* tree of the central provinces of China, and is figured in the *Chih wu ming*, xxxv. 24. A kind, known as the wild or yellow *t'an* tree, is figured in the same volume, folio 17. This species of *Dalbergia* is a common tree in Hupeh, in the flat country, and its wood, being hard and durable, is much used for making rammers of oil-presses, wheel-spokes, tool-handles, and the blocks and pulleys used on the native craft. A pulley made out of the wood was sent by me to Kew, and is in the museum there. A paper is manufactured at Wuhu out of the bark of the *t'an* tree; but I am not quite certain as to this being *Dalbergia hupeana*.'—A. Henry.

This is the *pai-t'an* of Ningpo, of which wood specimens have been sent by Consul Cooper to the Kew Museum.

Fig. 1. Flower, after removal of petals. 2. Vexillum. 3. Ala. 4. Petal of carina. 5. Pistil. 6. Longitudinal section of ovary. *Enlarged.*

Arundinaria kurilensis, Rupr. var:

Plate 1969.

ARUNDINARIA KURILENSIS, *Rupr. var.*

Gramineæ. Tribe Bambuseæ.

A. kurilensis, *Ruprecht*, *var.* paniculata; *F. Schmidt*, *Reisen im Amurlande und auf d. Ins. Sachalin*, 198; foliis culmi foliiferi oblongo- vel ovato-ellipticis acuminatis basi rotundatis minute tessellatis subtus ad nervos parce setuloso-pilosis deinde glabris, culmi floriferi multo minoribus ovato-lanceolatis setuloso-ciliatis, vaginis fimbrilliferis, paniculæ terminalis ramis elongatis erectis pubescentibus, spiculis purpurascentibus lanceolatis discretis adpressis internodiis longioribus.—A. Vietchii, *N. E. Brown* in *Gard. Chron.* 1889, vol. v. 521; B. Vietchii, *Carr. in Rev. Hort.* 1888, p. 90; and B. palmata, *Hort. Latour-Marliac* (*ex N. E. Brown*, l. c.).

Hab. Japan, *Rein*; and Sachalin, *Schmidt*.

Folia 5–7 poll. longa, 2–2$\frac{1}{3}$ poll. lata; culmi floriferi 1$\frac{1}{2}$–3 poll. longa. *Panicula* 5–6 poll. longa, stricta. *Glumæ* vacuæ variabiles, superior cymbiformis elliptico-lanceolata acutiuscula, inferior minuta linearisubulata; gluma florifera ovata breviter acuminata 7- vel obscure 9-nervosa, apicem versus parce setulosa, c. 4 lin. longa; palea gluma subæquilonga, minute bidentata. *Lodiculæ* obovatæ ciliatæ. *Stamina* 6–3. *Ovarium* cylindricum glabrum.

Probably to this species may be referred the Bambusacea published by Mr. Gamble last year, in Journ. Asiat. Soc. Bengal, 207, t. 7, under the name of *Microcalamus Prainii*. The name *Microcalamus* was preoccupied, having been published by Mons. Franchet the previous year (1889) in *Journ. de Botanique*, 282, for a Bambusacea from the Congo. I think *Bambusa senanensis*, Franch. et Savat. *Enum. Pl. Jap.* ii. 182, 606, may be a form of *A. kurilensis* (var. *speciosa*).

On the technical ground of the usual number of stamens this species has been referred to *Bambusa*; but in habit it is so diverse from that genus, and so entirely an *Arundinaria*, that I do not hesitate to follow Ruprecht, Schmidt, and Mr. Brown in referring it to the latter genus. I further agree with Schmidt in regarding it as a variety of *A. kurilensis*, which he looks upon as a very variable species. The number of stamens is not constantly six. Mr. Brown and I have found them varying down to three.—D. Oliver.

Fig. 1. Spikelet and lower part of rachis with empty glumes. 2. Flowering glume. 3. Palea. 4. Lodicule. 5. Essential organs. 6. Pistil. *Enlarged.*

M.S. del. et lith.

Metaplexis Hemsleyana, Oliv.

Plate 1970.

METAPLEXIS HEMSLEYANA, *Oliv.*

Asclepiadeæ. Tribe Cynancheæ.

M. Hemsleyana, *Oliv.* (Holostemma sinense, *Hemsl. in Journ. Linn. Soc.* xxvi. 103); volubilis, ramulis gracilibus glabrescentibus, foliis cordato-ovatis petiolatis acutis vel obtusis cuspidatis supra glabris v. costa basin versus puberula, subtus glaucis, cymis axillaribus pedunculatis subumbellatis v. interruptim racemosis, pedicellis flore subæquilongis, calycis segmentis lanceolatis acutiusculis corolla dimidio brevioribus, corollæ lobis ovatis obtusis glabris v. extus parce pilosulis, æstivatione dextrorsum obtegentibus, corona ima basi tubi staminei inserta 5-lobata, lobis a basi distinctis antheris alternis brevibus rotundatis gynostegii multoties brevioribus, stylo breviter subulato bifido.

Hab. China, Prov. Hupeh, near Ichang. *Dr. A. Henry* (Nos. 2755, 3992, 6625 A, 7262).

Folia $2\frac{1}{2}$–4 poll. longa. *Pedunculi* 2–3 poll. longi. *Flores* $\frac{1}{3}$ $\frac{1}{2}$ poll. diam.

Differs from *Holostemma* in the corona and produced stigma. The corona of *Metaplexis Stauntoni* is nearly identical, but the corolla-lobes are strongly pilose within, and the style much more elongate.—D. Oliver.

Fig 1. Æstivation of corolla. 2. Gynostegium, corolla removed. 3. Pollinia. *Enlarged.*

PL 1971.

Henrya Augustinana, Torrey.

Plate 1971.

HENRYA AUGUSTINIANA, *Hemsl.*

Asclepiadeæ. Tribe Cynancheæ.

H. Augustiniana, *Hemsl. in Journ. Linn. Soc.* xxvi. 111; volubilis caule glabro striato, foliis ovato-lanceolatis basi cordatis acuminatis glabris v. costa supra obsolete pilosula, floribus flavis graciliter pedicellatis in cymis divaricatis paniculatis axillaribus dispositis, calyce parvo 5-partito, lobis ovato-lanceolatis obtusiusculis marginibus subhyalinis, corolla rotata profunde 5-fida, segmentis ovato-ellipticis obtusis venulosis æstivatione dextrorsum obtegentibus calyce 3-plo longioribus, corona 0, gynostegio parvo tubo corollæ subæquilongo, filamentis breviter coalitis, antheris membrana reniformi inflexa terminalis, stigmate bilobulato antheras vix superante.

Hab. China, Prov. Hupeh, near Ichang, *Dr. A. Henry* (No. 4252).

Folia 3–4½ poll. longa; petiolus ½–¾ poll. longus. *Flores* ¼ poll. diam.—D. Oliver.

Fig. 1. Æstivation of corolla. 2. Flower. 3. Corolla, from above. 4. Gynostegium. 5. Pollinia. *Enlarged.*

M.S. del. et lith.

Buddleia officinalis, Max.

Plate 1972.

BUDDLEIA OFFICINALIS, *Maxim.*

Loganiaceæ

B (**Neemda**) **officinalis**, *Maxim. in Mél. Biol.* x. 675; frutex, ramulis foliis subtus et inflorescentia dense cano- vel cinnamomeo-tomentosis, foliis ovali- vel lanceolato-oblongis acutis sæpe acuminatis integris denticulatisve breviter petiolatis, thyrsis terminalibus sæpe angustis, floribus in cymis pedunculatis plurifloris congestis brevissime pedicellatis, bracteolis calyce brevioribus lineari-lanceolatis, calyce corolla 4-plo breviore campanulato tomentoso breviter et obtuse 4-dentato, corolla extus tomentella, tubo leviter incurvo, limbi brevis lobis rotundatis intus glabris tubo intus parce pilosulo, antheris oblongis subsessilibus tubi triente superiore insertis, ovario ellipsoideo tomentoso in stylum attenuato.

Hab. China, Provs. Shensi and Kansuh (*ex Maximowicz*); Hupeh, Ichang, *Watters*, *Maries*, *Dr. A. Henry* (Nos. 1117, 1291, 1447, 1527 3110, 5363); Szechwan, *Faber*.

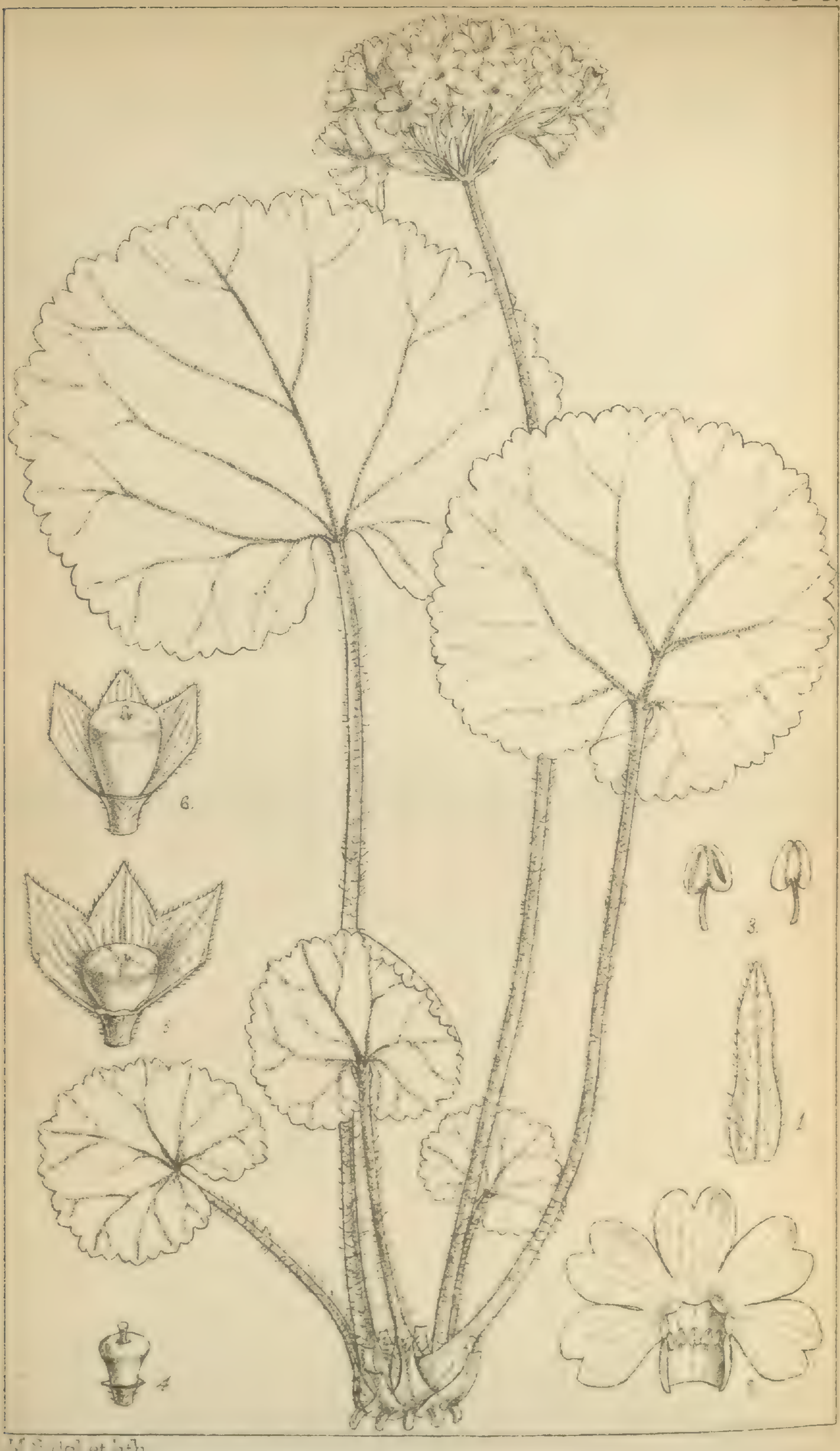
Folia: lamina $2\frac{1}{2}$–$3\frac{1}{2}$ poll. longa, $\frac{3}{4}$–$1\frac{1}{2}$ poll. lata; petiolus 2–6 lin. longus. *Flores* $\frac{1}{3}$–$\frac{1}{2}$ poll. longi. *Capsula* crustacea oblongo-ellipsoidea, calyce duplo longior.—D. Oliver.

'This is one of the two sources of the Chinese drug known as *mêng-hua* or *mi-mêng-hua*. Piasezki, who found this plant in Shansi and Kansuh, says that the flowers are sent from these provinces to Hankow for sale as a drug, in Chinese, "*mun-chua*" (*Mél. Biol.* x. 676). This species of *Buddleia* is common about Ichang, but is not utilised there as a drug. The flower-buds are used, and a comparison of a specimen of Porter Smith's (of *mêng-hua*) in the Pharmaceutical Museum establishes the correctness of Piasezki's information.

'At Ichang the name *mêng-hua* is applied to *Edgeworthia chrysantha*, Lindl.; and a specimen in the Pharmaceutical Museum from Hong Kong is undoubtedly the flowers of this species.

'There is an export from Hankow of 20 tons of *mêng-hua*; and the two preceding articles (which are probably referred to in *Pên Ts'ao Kang Mu*, xxxvi. 69) are included under the same name. The *Buddleia* flower-buds are obtained from Shensi and Kansuh; while the flowers of the *Edgeworthia* are got from shrubs cultivated in Hupeh.'—A. Henry.

Fig. 1. Flower, detached. 2. Calyx, laid open, and pistil. 3. Corolla, laid open. 4. Anther, back and front. 5. Transverse section of ovary. *Enlarged.*



M. Stridel et lith.

Androsace Henryi Oliv.

Plate 1973.

ANDROSACE HENRYI, *Olic.*

Primulaceæ. Tribe Primuleæ.

A. Henryi, *Olic.* (*sp. nov.*) ; perennis, foliis omnibus radicalibus longe petiolatis rotundatis basi profunde cordatis lobulatis lobulis crenato-dentatis precipue in nervis pilosulis, petiolis parce pilosis, scapis folio longioribus, umbellis 10–30-floris, involucri bracteis linearibus v. lineari-subulatis pilosulis pedicello 2–4-plo brevioribus, calycis 5-fidi tubo campanulato lobis ovato-lanceolatis acutiusculis, corolla calycem superante albida, segmentis limbi late obovatis emarginatis, tubo ore leviter constricto, capsula subturbinata truncata calycis tubum interdum subæquante apice albida subcartilaginea 15–20-sperma.

Hab. China, Prov. Hupeh, District South Patung ; *Dr. A. Henry* (Nos. 4868, 5364).

Folia : lamina $1\frac{3}{4}$–$3\frac{1}{2}$ poll. lata ; petiolus 3–7 poll. longus. *Scapi* 1–3, laxe pilosi.

The nearest ally to this species would seem to be *A. geraniifolia*, Watt (Hooker, *Fl. Brit. Ind.* iii. 497), of the Himalaya. Mr. Faber collected what may be a form of *A. Henryi* in fruit, on Mount Omei, in the Province of Szechwan.—D. Oliver.

Fig. 1. Involucral bract. 2. Corolla, laid open. 3. Anther, back and front. 4. Ovary. 5, 6. Fruit. *Enlarged.*

M. Sadeler lith

Haworthia stenophylla, Baker

Plate 1974.

HAWORTHIA STENOPHYLLA, *Baker.*

Liliaceæ. Tribe Aloineæ.

H. stenophylla, *Baker* (*sp. nov.*) ; bulbo ovoideo, tunicis paucis ovatis, fibris radicalibus cylindricis, foliis circiter 4 rigide erectis anguste linearibus marginibus revolutis integris, pedunculo foliis longiore, racemo laxo simplici, pedicellis brevibus erecto-patentibus medio articulatis, bracteis parvis superioribus ovatis inferioribus lanceolatis, perianthii tubo cylindrico, segmentis linearibus falcatis tubo brevioribus, genitalibus in tubo inclusis.

Hab. Transvaal; grassy mountain slopes of the Saddleback range near Barberton, *Galpin*, No. 858.

Folia 7–8 poll. longa. *Pedunculus* subpedalis. *Racemus* 3–4-pollicaris. *Perianthium* 6 lin. longum.

There are only two other species known with these long narrow leaves, both discovered recently, viz. *H. tenuifolia* (Engler, '*Jahrbuch*,' x. 2, t. 1), a native of Bechuanaland, and *H. Saundersiæ* (Baker, *inedit.*), a native of the Transvaal.—J. G. Baker.

Fig. 1. Detached flower. 2. Stamens and pistil. 3. Pistil. *Enlarged.*

M S del et lith

Inula racemosa, Hk.f

Plate 1975.

INULA RACEMOSA, *Hook. f.*

Compositæ. Tribe Inuloideæ.

I. racemosa, *Hook. f.*, *Flora Brit. Ind.* iii. 292; herba 2–5-pedalis, caule erecto leviter angulato v. sulcato pilosulo interdum scabrido, foliis superioribus ovato- v. lanceolato-oblongis acutis dentatis supra scabridis subtus molliter tomentosis sessilibus amplexicaulibus, capitulis 2–3 poll. diam. in axillis foliorum superiorum solitariis sessilibus v. breviter pedunculatis, involucri bracteis exterioribus herbaceis extus tomentosis apice recurvis interioribus longioribus scariosis sæpe glabratis discum sæpe superantibus, radii corollis angustissime ligulatis longitudinaliter 5-nervosis, disci corollis acute 5-dentatis, pappo ovario 2–3-plo longiore setaceo setis inæqualibus minute barbellatis, ovario glabro angulato longitudinaliter striato.

Hab. Western Himalaya, *Dr. Falconer*, *Dr. Thomson*; China, Prov. Hupeh, Patung District (cultivated as a drug), *Dr. A. Henry* (No. 4928).

Folia radicalia (in *spp. himal.*) 1–1½-ped. longa in petiolum subæquilongum angustata; folia superiora capitulifera 4–6 poll. longa sessilia. *Corolla* ligulata radii 1–1¼ poll. longa.

The specimen described in detail above is the Chinese one. Dr. Henry supplies the subjoined note.—D. Oliver.

'*Inula racemosa*, Hk. f., is cultivated in the mountains of Hupeh as a substitute for *putchuk*, the root of *Aplotaxis auriculata*, DC., which is so largely imported into China by way of Calcutta and Bombay from Cashmere. The name given to *Inula racemosa*, Hk. f., is *k'uang mu hsiang*, i.e. Canton (but inland in Hupeh, meaning *foreign*) putchuk.

'In Japan, Elecampane (*Inula Helenium*, L.) is cultivated under the name of *t'u mu-hsiang*, or local putchuk.

'No doubt this plant also contains *inulin* in quantity; and it may have been introduced into cultivation in China by the overland route from India.'—A. Henry.

Fig. 1. Ray-floret. 2. Seta of pappus. 3. Disk floret. 4. Anthers. 5. Stigma. *Enlarged.*

VOL. X.—PART IV.] [AUGUST.

HOOKER'S

ICONES PLANTARUM;

OR,

FIGURES, WITH DESCRIPTIVE CHARACTERS AND REMARKS,

OF NEW AND RARE PLANTS,

SELECTED FROM THE

KEW HERBARIUM.

THIRD SERIES.

EDITED FOR THE BENTHAM TRUSTEES BY

DANIEL OLIVER, F.R.S., F.L.S.

EMERITUS PROFESSOR OF BOTANY IN UNIVERSITY COLLEGE, LONDON: LATE KEEPER OF THE HERBARIUM AND LIBRARY, ROYAL BOTANIC GARDENS, KEW.

Under the Authority of the Director of the Royal Botanic Gardens, Kew.

VOL. X.

OR VOL. XX. OF THE ENTIRE WORK

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M.S. del, et lith.

Pithecolobium Balansæ, Oliv.

Plate 1976.

PITHECOLOBIUM BALANSÆ, *Oliv.*

Leguminosæ. Tribe Ingeæ.

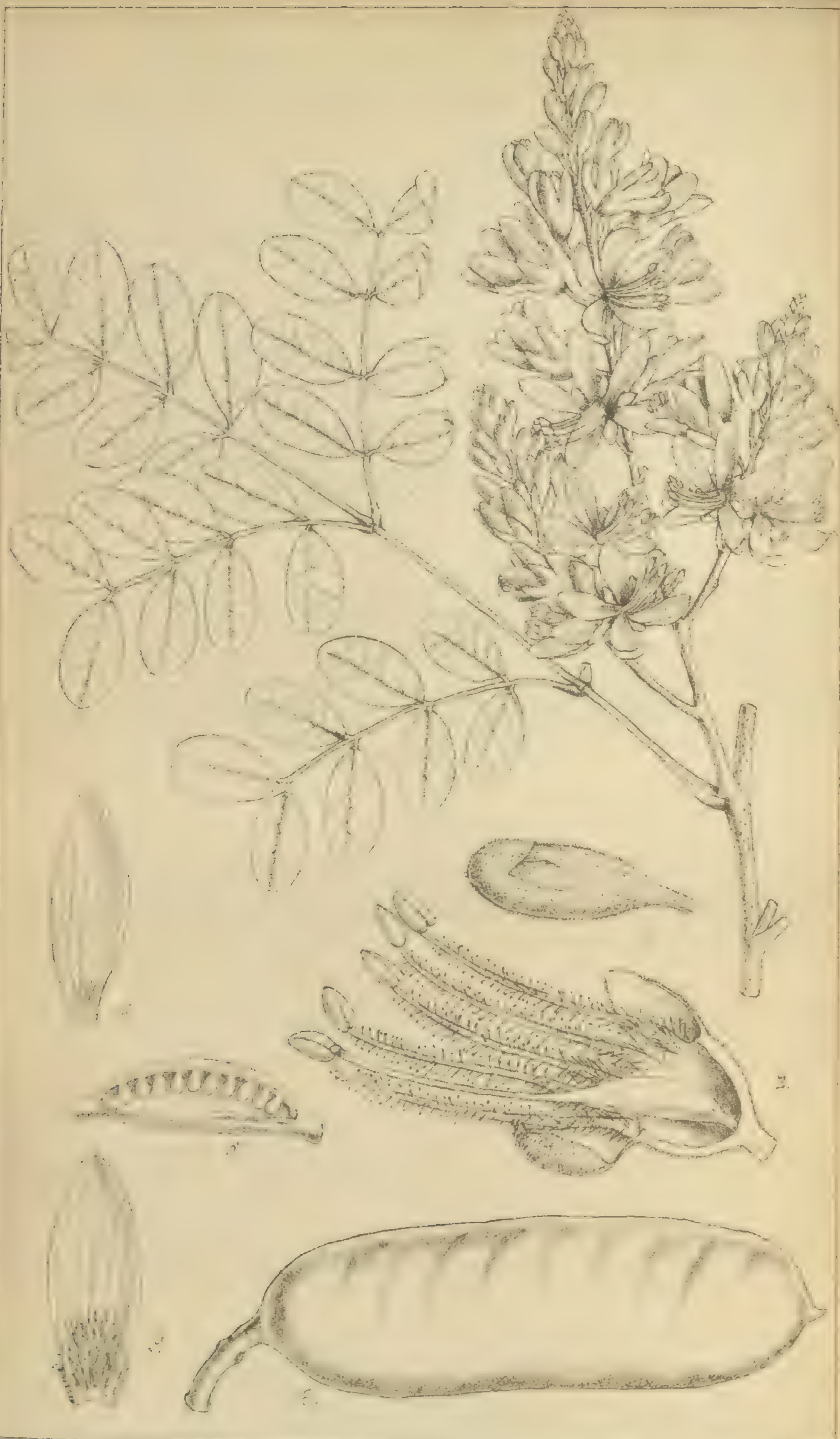
P. Balansæ, *Oliv.* (*sp. nov.*), arbuscula, 20–30 pedalis inermis, pinnis bijugis, foliolis amplis 4-jugis oblongo- vel obovato-ellipticis breviter obtuse apiculatis glabratis costa nervisque primariis subtus prominulis breviter petiolulatis, stipulis obsoletis, paniculis folio brevioribus ferrugineo-tomentosis in axillis superioribus dispositis, floribus ferrugineis capitatis, capitulis breviter pedunculatis, calyce irregulariter fisso, petalis calyce longioribus extus ferrugineo-hirsutis, staminibus ∞ inferne in tubum coalitis, antheris parvis late rotundatis dorso mediofixis inappendiculatis, ovario glabro breviter stipitato, ovulis c. 10–12 biseriatis, legumine recto turgido subtereti 1–oligospermo, valvis crassiusculis rigidis, seminibus magnis lævibus (in leguminibus dispermis truncato-turbinatis), testa crassa indurata.

Hab. Tonkin, forests of Mont. Bari; *Balansa* (Nos. 2298, 2299).

Folia 14–18 poll. longa; foliola 4–5 (3–7), poll. longa $1\frac{1}{2}$–$2\frac{1}{2}$ poll. lata; petiolulus $\frac{1}{6}$–$\frac{1}{4}$ poll. longus. *Legumen* 4–7 poll. longum; semina $1\frac{3}{4}$ poll. longa, basi truncata $1\frac{1}{3}$ poll. lata.

The sections of this large genus were provisionally left by Mr. Bentham in his Memoir on the Mimoseæ, in the 'Transactions of the Linnæan Society,' vol. xxx., in the anticipation that some modification might become expedient with better knowledge. As they now stand I suppose this plant may be regarded as an exceptional member of the section *Samanea*.—D. Oliver.

Fig. 1. Expanding flower. 2. Calyx. 3. Corolla laid open, showing carpel. 4. Anther, back and front. 5. Ovary laid open. *Enlarged.*



M.S.del.et lith.

Caesalpinia paucijuga Benth.

Plate 1977.

CÆSALPINIA PAUCIJUGA, *Benth.*

Leguminosæ. Tribe Eucæsalpinieæ.

C. (§ **Libidibia**) **paucijuga**, *Bentham MS. in Herb. Kew*; pinnis sæpius bijugis cum impari, foliolis 4–5-jugis ellipticis v. obovatis obtusis tenuiter coriaceis glabris brevissime petiolulatis, floribus racemosis, racemis axillaribus simplicibus v. paniculatis puberulis, bracteis ovatis acutis v. acuminatis deciduis, calycis tubo oblique campanulato limbo subæquilongo, lobis obtusis elliptico-oblongis lobo antico galeato, petalis calycem superantibus elliptico-lanceolatis postico paulo majore intus setuloso, filamentis glanduloso-setulosis, ovario glabro breviter stipitato, ovulis c 10, legumine oblongo compresso.

Hab. Only known to us from the Botanic Garden, Trinidad; sent by Mr. Prestoe. It occurs also in St. Thomas; introduced from Trinidad, *Eggers* (No. 134).

Foliola 5–8 lin. longa, $2\frac{1}{2}$–5 lin. lata. *Bracteæ* 1–$1\frac{1}{2}$ lin. longæ. *Pedicelli* calyce florifero subbreviores, puberuli. *Legumen* breviter stipitatum, rectum, valvis lævibus, $2\frac{3}{4}$–3 poll. longum, 9–11 lin. latum.—D. Oliver.

Fig. 1. Bud. 2. Vertical section of calyx, showing insertion of stamens and carpel. 3 and 4. Petals. 5. Longitudinal section of ovary. 6. Legume. 1–5 *enlarged.*

M. Saal del. et lith.

Pedicularis vagans Hemsl.

Plate 1978.

PEDICULARIS VAGANS, *Hemsl.*

Scrophulariaceæ. Tribe Euphrasieæ.

P. (§ **Rhyncholophæ**) **vagans**, *Hemsl. in Journ. Linn. Soc.* xxvi. 218; herba perennis insignis siccitate nigrescens, caulibus elongatis gracilibus debilibus vagantibus v. scandentibus, foliis radicalibus amplis longe petiolatis bipinnatisectis omnino filiciformibus papyraceis parcissime setulosis, oblongo-lanceolatis, pinnis confertis decurrentibus pinnatifidis, lobis ultimis circiter 13–17 sursum gradatim paucioribus leviter oblique deltoideis, caulinis suboppositis nodis distantibus oxyacanthoideis, distincte graciliterque petiolatis, ovali-oblongis v. interdum fere orbicularibus sæpius inæqualiter alte 5–7-lobatis simul setuloso-denticulatis, floribus in axillis foliorum dense fasciculatis, brevissime pedicellatis bracteis foliaceis stipitatis subtendentibus, glabris, calyce tubuloso leviter ventricoso tubum corollæ æquante 9-nervoso inæqualiter breviter 5-lobato, lobis acuminatis integris v. paucidenticulatis, corollæ tubo sursum gradatim expanso, labiis subæquilongis, superiore rostrato incurvo inferiore patente late 3-lobato, lobis subæqualibus rotundatis, staminibus inclusis, filamentis filiformibus glabris, ovario compresso ovoideo glabro, capsula ignota.—Maxim. *Mél. Biol.* xii. 937, t. vii., fig. 188.

Hab. China, Prov. Szechwan, Mt. Omei, 4,000–5,000 feet, *Faber*.

Folia radicalia pedalia et ultra; caulina cum petiolo $1\frac{1}{2}$–2 poll. longa. *Flores* vix pollicares.

The fern-like radical leaves and slender climbing or trailing stems characterise this remarkable species.—W. B. Hemsley.

Fig. 1. Flower. 2. Anther, back and front. 3. Immature capsule. *Enlarged*

M.S. del. et lith.

Scævola hainanensis, Hance.

Plate 1979.

SCÆVOLA HAINANENSIS, *Hance.*

Goodenovieæ.

S. (§ **Crossotoma**) **hainanensis**, *Hance, in Journ. Bot.* 1878, 229; frutex caulibus diffusis prostratis nunc radicantibus cortice suberoso obductis, foliis alternis inferne fasciculatis, lineari-spathulatis obtusis carnosulis glabris axillis breviter lanatis, floribus axillaribus solitariis albidis foliis subbrevioribus brevissime pedicellatis, bibracteolatis, bracteolis carnosis lineari-spathulatis ad basin calycis insertis alabastro breviori-bus, calyce glabro limbo brevi breviter 5-dentato dentibus obtusis tubo 3–4-plo brevioribus, corolla extus glabra carnosula oblique fissa, segmentis obovatis v. primo adspectu marginibus tenuibus inflexis ovali-oblanceolatis.

Hab. Circa Hoi-hau, Ins. Hainan, *Bullock*; *Dr. A. Henry* (No. 8159).

Ramuli ultimi pauce hirtelli v. setulosi. *Folia* $\frac{1}{2}$–1 poll. longa. *Corolla* 4–5 lin. longa. *Antheræ* lineari-oblongæ inappendiculatæ.

Nearly related to *S. spinescens*, R. Br., as observed by Dr. Hance; a species restricted to Australia, where, however, it is widely distributed. It is very interesting as another instance of extension to China of a characteristically Australian type.—D. Oliver.

Fig. 1. Flower. 2. Anther, back and front. 3. Inferior ovary, laid open; style and stigma. *Enlarged.*

M. S. del. et lith.

Lysimachia Hemsleyana, Maxim.

Plate 1980.

LYSIMACHIA HEMSLEYANA, *Maxim.*

Primulaceæ. Tribe Lysimachieæ.

L. Hemsleyana, *Maximowicz MSS. in litt.* Habitu *L. Christinæ,* caule prostrato parce pilosulo v. glanduloso-hirto, foliis cordiformibus v. late ovatis obtusis petiolatis glandulis immersis inconspicuis sparsis præcipue marginem versus numerosioribus, pedunculis 1-floris axillaribus folio sæpius brevioribus, flore pedicello breviore, lobis calycinis lineari-lanceolatis corolla brevioribus, corolla aurantiaca campanulato-rotata lobis ellipticis apicem versus glandulosis glandulis parvis rotundatis breviter oblongisve (haud longe linearibus ut in *L. Christinæ*), tubo stamineo extus puberulo.

Hab. China, Prov. Hupeh, near Ichang, *Dr. A. Henry* (Nos. 489, 1381, *ex parte*).

Folia $\frac{3}{4}$–1 poll. longa; petioli $\frac{1}{4}$–$\frac{1}{3}$ ($-\frac{1}{2}$) poll. longi. *Calyx* lobis 3–$3\frac{1}{2}$ lin. longis.

Included under *Lysimachia Christinæ*, Hance, in Mr. Hemsley's Enumeration (*Journ. Linn. Soc.* xxvi. 49), to which species it is very closely allied, differing in being more or less minutely hairy, the stem always so, and the leaves often scabrid above or minutely ciliolate, the calyx-lobes proportionally longer, and the gland-dots round or very shortly oblong, not linear—D. Oliver.

Fig. 1. Flower. 2. Andrœcium. 3. Ovary. *Enlarged.*

Lysimachia ruiginosa. Hemsl

Plate 1981.

LYSIMACHIA RUBIGINOSA, *Hemsl.*

Primulaceæ. Tribe Lysimachieæ.

L. rubiginosa, *Hemsl. in Journ. Linn. Soc.* xxvi. 56. Herba erecta v. adscendens pilosula, foliis oppositis petiolatis ovato-lanceolatis acutis basi rotundatis in petiolum breviter angustatis glandulis linearibus punctiformibus intermixtis immersis notatis, floribus flavis in cymas bracteatas 2 3-flores axillares v. quasi terminales breviter pedunculatas dispositis v. solitariis, bracteis ovatis cum flore subæquilongis, segmentis calycinis linearibus v. anguste ovalibus acutis parce pilosulis glabratisve corolla profunde 5-fida brevioribus, corollæ lobis ellipticis v. ovali-oblongis acutiusculis, staminibus inæqualibus tubo extus puberulo.

Hab. China, Prov. Hupeh, Patung District; Prov. Szechwan, So. Wushan; and Prov. Hunan, Shih-mên, *Dr. A. Henry* (Nos. 1823, 2440, 4680, 4945, 6244, 7559).

Caulis 1½–2 pedalis. *Folia* parce pilosula, lamina 2–3 poll. longa, ⅔–½ poll. lata; petioli ⅓–¾ poll. longi. *Pedunculus* ⅙–⅓ poll. longus; pedicelli calyce breviores v. flores subsessiles.—D. Oliver.

Fig. 1. Flower front calyx, lobe removed. 2. Andrœcium. 3. Pistil. *Enlarged.*

Hanhart lith.

Hypochoeris pinnatifida, Franch.

Plate 1982.

LYSIMACHIA PARIDIFORMIS, *Franchet.*

Primulaceæ. Tribe Lysimachieæ.

L. paridiformis, *var.* elliptica, *Franch. in Bull. Soc. Linn. Paris*, 1884, 433; ramis florentibus strictis erectis glabris apice foliiferis, ob nodos approximatos foliis amplis quasi verticillatis, scapo inferne internodiis elongatis foliis squamiformibus tantum per paria instructo, foliis sæpius 4-nis ellipticis breviter acuminatis cuspidatisve breviter petiolatis crassiusculis glabris punctis oblongis v. linearibus sparsis notatis, floribus luteis terminalibus inter folia umbellatim congestis, bracteis lineari-subulatis, pedicellis flore brevioribus, lobis calycinis lineari-lanceolatis acutis rigidiusculis basi margine scariosa ciliata rotundato- v. ovato-dilatatis, corolla profunde 5-fida lobis ovali-oblongis v. ellipticis calycem superantibus, filamentis tubo corollæ longioribus in tubum connatis apice liberis, ovario sub-globoso, capsula globosa calyce fructifero 2-plo breviore.

Hab. China, Prov. Kwei-chau, *Perny*; Hupeh, near Ichang, *Dr. A. Henry*; Szechwan (Nos. 3500, 4202), Min River, *Faber*.

Rami floriferi 10–18 poll. longi. *Folia* $3\frac{1}{2}$–$4\frac{1}{2}$ poll. longa, 2–$2\frac{2}{3}$ poll. lata; petioli $\frac{1}{4}$–$\frac{1}{3}$ poll. longi v. folia interdum subsessilia. *Inflorescentia* 1–2 poll. diam. *Calyx* segmentis 4–5 lin. longis.

Excepting two specimens collected by Faber on the Min River, all the specimens which we have received from Hupeh and Szechwan belong to the broad-leaved variety described above. M. Franchet has obligingly sent us a specimen of his variety *stenophylla*, in which the leaves in the pseudo-verticil immediately under the flowers vary in number to eight or ten, and scarcely exceed half an inch in breadth. Faber's specimens referred to above are identical with this. In none of our native specimens of the var. *elliptica* do the leaves exceed four. M. Franchet's specific name well expresses the aspect of this curious plant. Since the above description was drawn up, this plant has flowered, from seeds sent by Dr. Henry, in the Royal Gardens. The leaves sometimes occur in verticils of three; and in one specimen the flowers are raised on a peduncle of $1\frac{1}{2}$ or 2 inches above the upper leaves.—D. Oliver.

Fig. 1. Calyx and pistil. 2. Corolla, laid open. 3. Anther, back and front. 4. Capsule and calyx. *Enlarged.*

M.S. del et lith.

Lysimachia Fordiana, Oliv.

Plate 1983.

LYSIMACHIA FORDIANA, *Oliv.*

Primulaceæ. Tribe Lysimachieæ.

L. Fordiana, *Oliv.* (*sp. nov.*) habitu floribusque *L. paridiformis* sed foliis ex nodis caulinis superioribus dissitis haud squamiformibus et punctis glandulosis nigris parvis rotundatis haud oblongis linearibusve.

Hab. China, Prov. Kwangtung, *Ford.*

Folia 4–6 poll. longa, $2\frac{1}{4}$–$3\frac{3}{4}$ poll. lata; petioli $\frac{1}{3}$–$\frac{3}{4}$ poll. longi. *Calyx* segmentis oblongo-lanceolatis acutiusculis dense punctatis. *Corolla* calyce duplo longior, lobis ovali-oblongis obtusis, nigro-punctatis.

The leaves of the pseudo-verticil immediately under the inflorescence are like those of the preceding species in all respects excepting the form of their minute immersed glands, which are very numerous, and do not pass into the oblong or linear form of the sparse glands of *L. paridiformis*. The leaves of at least the upper node below the pseudo-verticil are similar to those around the flowers, not minute or squamiform, and conspicuously petiolate.—D. Oliver.

Fig. 1. Flower and bract. 2. Pistil. *Enlarged.*

M.S. del. et lith.

Dipsacus asper, Wall.

Plate 1984.

DIPSACUS ASPER, *Wall.*

Dipsaceæ.

D. asper, *Wall. Cat.* 428; *DC. Prodr.* iv. 646; caule erecto sulcato sæpius parce aculeolato, foliis inferioribus basin versus pinnatisectis, lobo centrali grosse serrato-dentato acuminato, setuloso-scabridis, superioribus lanceolatis deltoideo-dentatis apicem versus integris brevissime petiolatis, floribus in capitulis globosis longe pedunculatis dispositis, bracteis linearibus setulosis capitulo brevioribus, calyculis 4-dentatis calyce paullo brevioribus glabris dentibus ovato-deltoideis obtusiusculis ore disco subclausis, calycis tubo glabro incluso dentibus limbi ciliatis brevibus, corolla calyce 3–4-plo longior basi angustata extus breviter retrorso-hirsuta, genitalibus exsertis.

Hab. Khasia; 4,000–6,000 feet, *Wallich, Hooker and Thomson, and others*; and China, Prov. Hupeh, *Dr. A. Henry* (Nos. 160, 2267, 2941, 4792).

Capitula florifera 1–1½ poll. diam. The plant is figured and described from Chinese specimens.—D. Oliver.

Dr. Henry supplies the following note: '*Dipsacus asper*, Wall. occurs wild in the mountainous parts of Hupeh and Szechwan. The root is used as a drug, as much as a hundred tons yearly being exported from the port of Hankow. The native name is *hsü-tuan*, by which the plant is figured and described in *Chih wu Ming*, xi. 32. It is also known frequently as *chuan-tan*. A smaller quantity—about 15 tons annually—coming from the province of Kwangsi, is exported from Canton. Whether this is the product of the same plant I am not now in a position to state. In Japan *hsü-tuan* is given by some authorities as the name for *Lamium album*; but Metsumura in his latest book does not confirm this. See Porter Smith, "Contr. Mat. Med. China," p. 64, where a wrong identification of the Hankow drug is given.'

Fig. 1. Flower with involucel. 2. Involucel, laid open. *Enlarged.*

M. S. del et lith.

Aranga Listeri, Beccari

Plate 1985.

ARENGA LISTERI, *Beccari.*

Palmaceæ. Tribe Areceæ. Subtribe Caryotideæ.

A. Listeri, *Beccari MSS. in litt.*; subacaulis, frondium segmentis linearibus vel apicem versus anguste cuneatis apice denticulato-erosis v. in segmentis terminalibus obtusis breviter bilobatis spinuloso-dentatis, basi attenuatis exauriculatis, subtus in costa furfuraceis, rhachi furfuracea basi vaginante fibris longis stipata, spadicibus amplis ramis arcuat-d vergentibus primum gracilibus subteretibus simplicibus, floribus ♂ binis $\frac{1}{3}$ poll. longis 20–35-andris, sepalis breviter rotundatis v. subreniformibus coriaceis late imbricatis, petalis crasse coriaceis calyce multoties longioribus oblongis concavis basi brevissime coalitis, filamentis subulatis liberis; fl. ♀ sepalis late rotundatis, petalis deltoideis coalitis coriaceis incurvis ovario ovoideo trigono æquilongis. Didymosperma sp., *Hemsl. in Journ. Linn. Soc.* xxv. 359.

Hab. Christmas Island, *J. J. Lister*, 1887.

Segmenta frondium majora 15–30 poll. longa, segmenta latiora plus minus apicem versus dilatata $1\frac{3}{4}$ poll. lata (segmentum terminali cuneatum bilobum 3 poll. latum) subtus minutissime incano- v. sericeo-tomentella, punctis minutis raris brunneis nigrescentibusve notata. *Paniculæ* rami fl. ♂ gerentes crassitie pennæ corvinæ, tempore fructifero pennæ cygni, 10–20 poll. longi.

The pistillate flower, originating between the staminate ones, is at the time of expansion of the latter in a quite rudimentary stage, nor would it be reasonable, from our specimens alone, to infer that both ♂ and ♀ flowers originate from the same rachis, as Sig. Beccari points out is the case in the other species of *Arenga* and *Caryota*, the flower-bearing branches of the spadix being much stouter and longer in those which bear the expanded—or, in our specimen, the more advanced—pistillate flowers (without perceptible trace of the lateral fallen males), than the branches bearing expanded males. At the same time it is true, as noted above, that a rudimentary pistillate flower is present between the males in our specimens.—D. Oliver.

Fig. 1. Staminate flower. 2. Calyx of same. 3. Anther, back and front. 4 and 5. Pistil flower. 6. Vertical section of ovary. *Enlarged.*

M.S del et lith.

Catostemma fragrans, Benth.

Plate 1986.

CATOSTEMMA FRAGRANS, *Benth.*

Malvaceæ. Subtribe Matisieæ.

C. fragrans, *Benth. in Hook. London Journ. Bot.* ii. (1843) 365; *Icones Plantarum*, Pl. 1793.

Hab. British Guiana, banks of rivers, Schomburgk (No. 280); Lower Demerara river, *Jennan* (No. 4336). Received in flower and fruit from St. Vincent's, where it still survives in the old Botanic Garden, *Powell*, 1891.

Fructus monospermus ellipsoideus, 3–4 poll. longus; pericarpium crasse coriaceum 3-valve; valvis concavis extus parce tomentellis. *Semen* oblongum subcylindricum v. plus minus obovoideum, læve, rubrum, albuminosum, $2\frac{1}{2}$ poll. longum, $1\frac{1}{4}$–$1\frac{1}{3}$ poll. diam.; testa cellulosa cystis mucilaginosis copiosis prædita; albumine tenui; cotyledones crassæ plus minus conferruminatæ, cystigeræ.

I have little to add to the general description of this remarkable tree as given in the works above named. The specimens sent by Mr. Powell show that the leaves may vary to a length of 7 or 8 ins. with a petiole of 3–$3\frac{1}{2}$ ins. They are obtuse and mucronate, but scarcely retuse as in some of the indigenous specimens. *Catostemma* was originally referred by Mr. Bentham to Ternstrœmiaceæ. In 'Genera Plantarum,' i. 180, it was rejected from this Order and found provisional place, with a few other anomalous genera, at the end of Myrtaceæ, on the ground of the marked perigyny of the petals and stamens. Mr. Hemsley, on comparing the recently received specimens with a view to determine its affinity, was led to look into *Malvales* and there found the genus *Scleronema*, first published by Mr. Bentham in the 'Journal of the Linnean Society,' vi. 109, based upon specimens of Mr. Spruce's, collected on the Rio Uaupès, in North Brazil (No. 2548), which he rightly regards as congeneric with *Catostemma*; which latter name, having priority, must stand. Mr. Spruce's plant (*S. Spruceana*, Benth. l.c.) differs at sight in the elliptical or obovate leaves with a distinct apiculus and prominent transverse venation.

Although I do not know any member of the order Malvaceæ presenting such marked perigyny of the petals and stamens, I think its nearest relationship is here with *Hampea* and its allies where Mr. Bentham placed his *Scleronema*. The filaments cohere in phalanges; the anthers are unilocular. The calyx has a campanulate tube, at length circumsciss near the base, and the limb splits irregularly into 2 to 5 ovate-deltoid, or broader, segments; which of course are in no way imbricate, as Mr. Bentham thought the calyx might be, in the absence of an unopened bud.—D. Oliver.

Fig. 1. Bud. 2. Petal. 3. Stamen, back and front. 4. Vertical section of ovary and calyx, showing perigyny of corolla and stamens. *Enlarged.*

Neuwiedia veratrifolia. Bl.

Plate 1987.

NEUWIEDIA VERATRIFOLIA, *Bl.*

Orchideæ. Tribe Cypripedieæ.

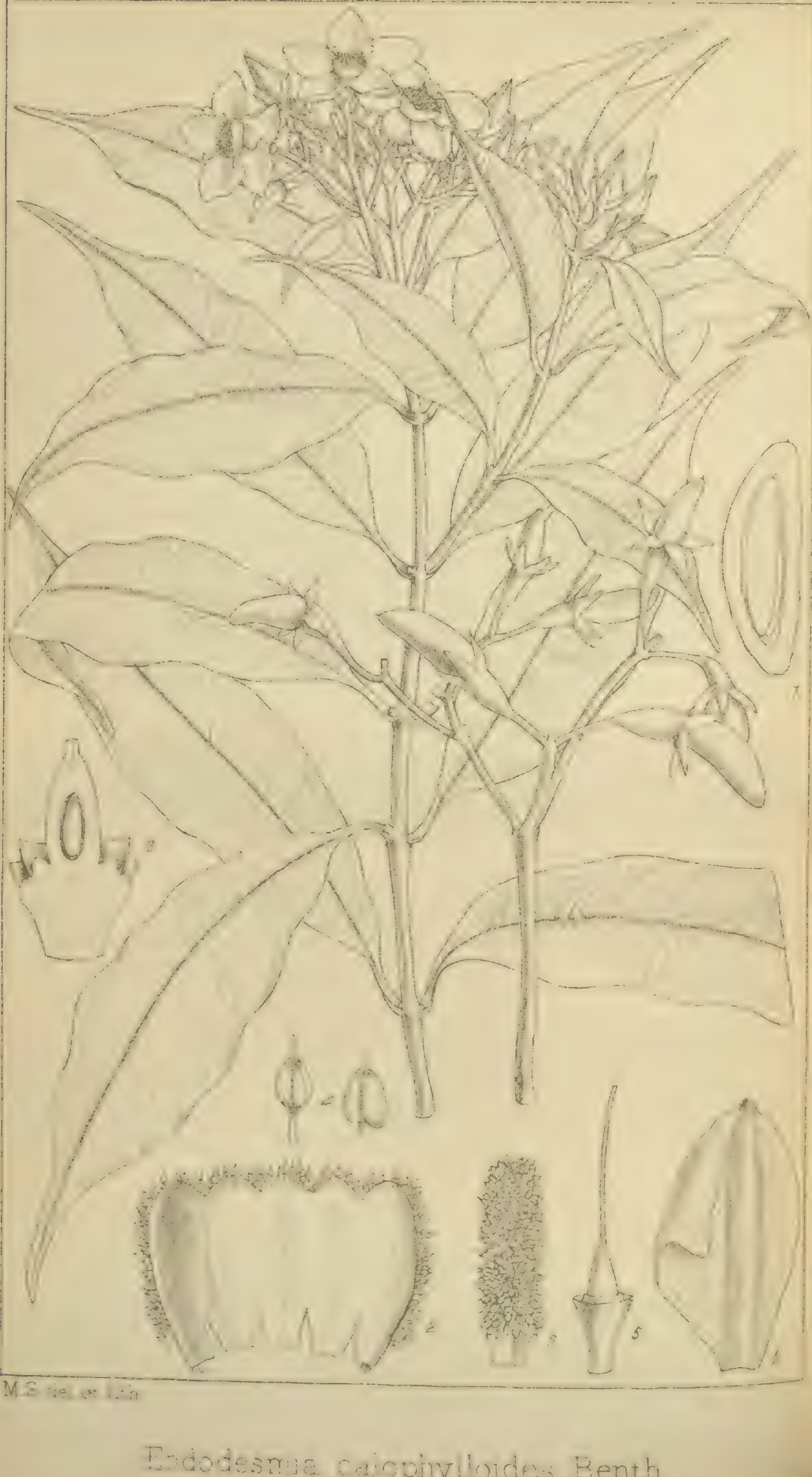
N. veratrifolia, *Blume in Hoeven and de Vriese, Tijdschr. (Amsterdam)* i. 142, foliis nervoso-plicatis ovali-lanceolatis tenuiter acuminatis basi in petiolum longiusculum attenuatis, racemo terminali spiciforme multifloro foliis breviore, bracteis gradatim minoribus anguste lanceolatis herbaceis glabratis inferioribus flores superantibus, floribus glabris, sepalis subæqualibus lineari-lanceolatis cum apiculo subapicali, petalis lateralibus oblongo-lanceolatis sepalis æquilongis, labello lineari oblongo incurvo apice concavo cum apiculo, antheris oblongis inappendiculatis. *Ann. Sc. Nat., sér.* 2, ii. 94 ; *Rolfe in Journ. Linn. Soc.* xxv. 231 (where additional references are given).

Hab. Java, *Blume* ; Borneo, Sarawak, *Beccari* (No. 1147).

Folia cum petiolo $1\frac{1}{4}$–$1\frac{1}{2}$ ped. longa, $1\frac{3}{4}$–$2\frac{1}{4}$ poll. lata. Racemus 6-8 poll. longus.

We only possess at Kew a drawing of Blume's type specimen which was kindly lent us by the authorities of the Leyden Herbarium. Mr. Rolfe, who has made a careful study of the Apostasieæ, feels confident in his identification of Sig. Beccari's specimen (for the use of which for the purpose of this plate we are indebted to that distinguished botanist) with Blume's plant. The species of this genus are nearly allied to each other, and their general facies, excluding *N. Griffithii*, is the same.—D. Oliver.

Fig. 1. Flower. 2. Anther, back and front. 3. Transverse section of ovary. *Enlarged.*



Endodesma calophylloides, Benth.

Plate 1988.

ENDODESMIA CALOPHYLLOIDES, *Benth.*

Hypericineæ. Tribe Vismieæ.

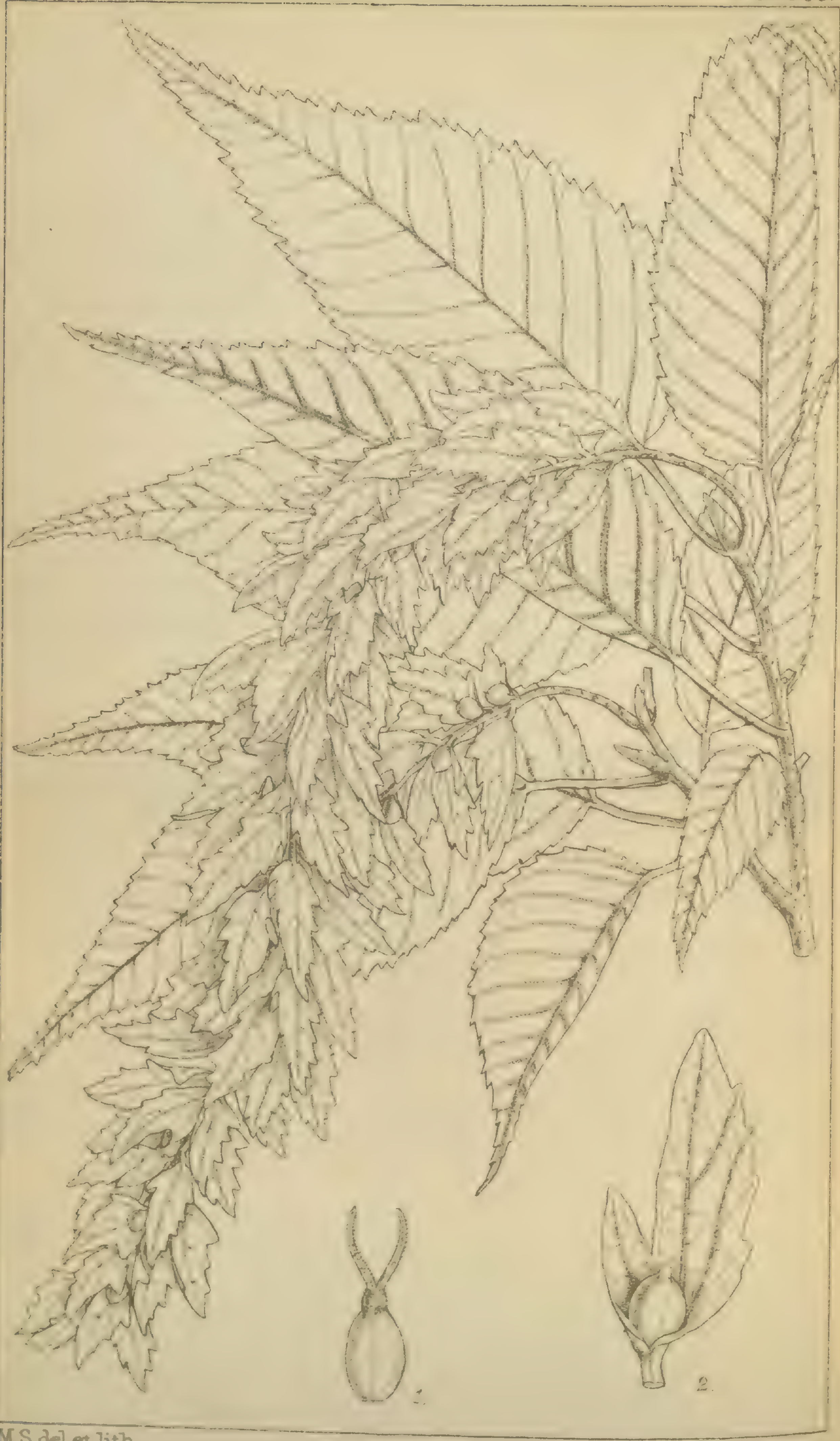
E. calophylloides, *Benth. Gen. Plant.* i. 166; arbuscula v. frutex glaberrimus, foliis oppositis petiolatis coriaceis ovali- vel oblongo-lanceolatis longe et obtusiuscule acuminatis, venis lateralibus crebris parallelis, impunctatis, floribus flavis in cymis pauci- vel plurifloris corymbiformibus subsessilibus dispositis, pedicellis crassis basi articulatis calyce sæpe brevioribus, calycis 5-partiti segmentis ovato- v. lanceolato-oblongis acutis, persistentibus, petalis calyce duplo longioribus, æstivatione contorto-imbricatis, carnosulis v. medio coriaceis, oblique obovatis latere interiore reflexo, lobo reflexo basi auriculato, phalangibus intus antheriferis, 5-polyandris, in tubum truncatum coloratum coalitis, antheris plus minus stipitatis p. maximum partem inclusis parvis ovatis apiculatis, gynœcio monocarpico subulato glabro, stylo elongato indiviso, ovario 1-loculare, ovulo solitario prope apicem cavitatis inserto pendulo, fructu oblique oblongo v. ovoideo, pericarpio coriaceo, albumine 0, cotyledonibus oblongis plano-convexis carnosis, radicula minuta supera, pedicello fructifero incrassato.—*Oliv., Fl. Trop. Afr.* i. 157.

Hab. West Tropical Africa; Cameroon and Gaboon Rivers, *Mann.*

Ramuli graciles teretes, novelli glaucescentes. *Folia* $2\frac{1}{2}$–3 poll. longa, $\frac{2}{3}$–$\frac{3}{4}$ poll. lata; petiolus $\frac{1}{8}$–$\frac{1}{6}$ poll. longus. *Flores* $\frac{2}{3}$–$\frac{3}{4}$ poll. diam. *Semen* 7–8 lin. longum.

Of this very interesting monotype, peculiar to the Biafra region of the Gulf of Guinea, it is remarkable that no specimens have reached us since the splendid collections of Gustav Mann, some thirty years ago. I leave the genus where it was first placed by Mr. Bentham, though in its monocarpellary gynœcium and solitary pendulous ovule it differs from any other member of the Order Hypericineæ as yet known to us.—D. Oliver.

Fig. 1. Petal. 2. Andrœcium. 3. Phalange of same, from within. 4. Anther, back and front. 5. Ovary. 6. Vertical section of same. 7. Longitudinal section of seed. *Enlarged.*



M.S. del et lith.

Carpinus laxiflora Bl. var.

Plate 1989.

CARPINUS LAXIFLORA, *Bl., var. macrostachya.*

Cupuliferæ. Tribe Coryleæ.

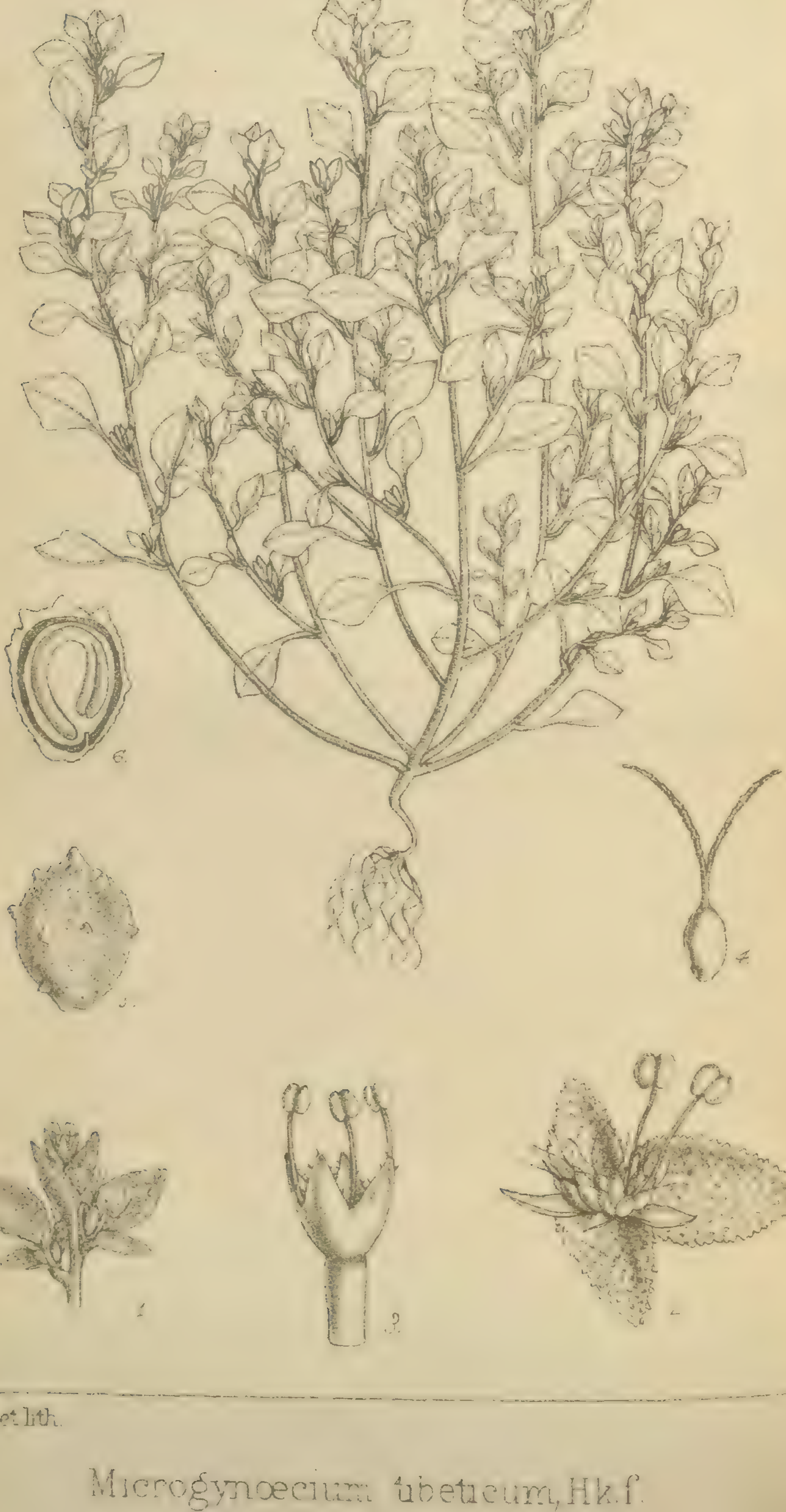
C. laxiflora, *Blume, Mus. Bot.* i. 309; foliis e basi rotundata v. subcordata ovato- vel oblongo-lanceolatis acuminatis inæqualiter duplicato-serratis subtus præcipue in costa parce sericeo-pilosis glabratisve, spicis fructiferis recurvis folio longioribus, squamis involucri rigidulis e basi concava ovata lanceolatis basi breviter et inæqualiter 3-fidis v. uno latere serratis altero basi tantum 1-dentatis, nuce late ovoidea longitudinaliter 6–8 nervosa glabra.

Hab. China, Prov. Hupeh, North Patung, *Dr. Henry* (No. 7013).

Folia sæpius 2–3 poll. longa; petiolus gracilis $\frac{1}{2}$–$\frac{3}{4}$ poll. longus. *Strobili* fructiferi $3\frac{1}{2}$–4 poll. longi; bracteæ involucrantes 7–8 lin. longæ.

Mons. Franchet reports *C. lariflora*, in 'Plantæ Davidianæ,' i. 279, as occurring near Kiukiang.—D. Oliver.

Fig. 1. Young fruit. 3. Same, with involucre. *Enlarged.*



M. S. del. et lith.

Microgynoecium tibeticum, Hk. f.

Plate 1990.

MICROGYNŒCIUM TIBETICUM, *Hook. f.*

Chenopodiaceæ. Tribe Camphorosmeæ.

M. tibeticum, *Hook. f., Fl. Brit. Ind.* v. 9. Sp. unica.

Hab. Gurwhal; Topidunga, *Strachey and Winterbottom*: Kumaon; Kunti-Yangti Valley, *Duthie* (No. 5952): Sikkim; Tungu, *J. D. Hooker*; always from 12,000 feet to 15,000 feet alt.

Herba annua monoica, pusilla 2–4 poll. e basi ramosa foliosa parce papilloso-farinosa. *Folia* alterna petiolata ovata deltoideo-ovata v. ovato-lanceolata acuta integra vel utrinque 1-dentata sæpe parce farinoso-papillosa tenuiter carnosula $\frac{1}{4}$–$\frac{1}{2}$ poll. longa; petiolus $\frac{1}{6}$–$\frac{1}{3}$ poll. longus. *Flores* minutissimi, inter folia absconditi, superiores sæpius masculi solitarii v. glomerulati bracteati. *Fl.* ♂: perianthium hyalinum 5-dentatum dentibus deltoideis v. deltoideo-lanceolatis; stamina 1–2–3, exserta, antheræ subdidymæ. *Fl.* ♀ minutissimi bracteati, bracteis lanceolatis linearibusve; stylus brevissimus v. obsoletus; stigmata 2 capillaria a basi v. fere a basi libera. *Utriculus* erectus compressus late ellipticus v. obovatus, maturitate nigrescens, apicem versus parce tuberculatus. *Semen* verticale; embryo hippocrepicus albumen cingens.

In general appearance like small specimens of some varieties of *Axyris amaranthoides*, but without the characteristic indumentum of that plant, resembling in this respect the less farinose species of *Atriplex*, as noted by Sir Joseph Hooker. I fail, however, to find the lateral bracteoles associated with each ♀ flower, as stated in *Gen. Plant.* iii. 56. The flowers appear to me associated with lanceolate or linear bracts, in some cases, at least, subtended by them and overtopped by the larger. The ♂ flowers are either solitary or glomerulate at the ends of the axillary ramuli.—D. Oliver.

Fig. 1. Portion of flowering branch. 2. Inflorescence, including one staminate flower. 3. Staminate flower. 4. Pistil. 5. Fruit. 6. Vertical section of same, showing embryo. *Enlarged.*

M.S. del, et lith.

Phænosperma globosa Munro

Plate 1991.

PHÆNOSPERMA GLOBOSA, *Munro.*

Gramineæ. Tribe Tristegineæ.

P. globosa, *Munro*; *Benth. in Journ. Linn. Soc.* xix. 59; elata glabra, foliis elongatis anguste lanceolato-linearibus longe acuminatis basi angustatis planis v. longitudinaliter plicato-striatis subtus glaucescentibus scabriusculis, ligulis conspicuis rigidis apice scariosis, panicula maxima folia superantia pyramidali, ramis sæpius 5–12 pseudo-verticillatis, gracilibus sæpius simplicibus adscendentibus inæquilongis lævibus v. minute scabriusculis, spiculis brevissime pedicellatis, floriferis ovalibus, caryopside obovoidea v. ellipsoidea leviter rugulosa.—*Franchet, Pl. David. Sin.* 326.

Hab. China; Prov. Kiangsi, Kiukiang, *David*, *Shearer*; Prov. Hupeh, Ichang and 'Nan-t'o and mountains to northward.'—*Dr. A. Henry* (Nos. 626, 1943, 2073, 3966, 3968).

Culmi 3–5 ped. alti, striati. *Folia* 1–2 ped. longa, majora $\frac{2}{3}$–1 poll. lata. *Spiculæ* pedicello 3–5-plo longiores vel interdum subsessiles, floriferæ $1\frac{3}{4}$–2 lin. longæ. *Glumæ* inæquales persistentes, exterior spicula dimidio brevior oblongo-lanceolata obtusiuscula 1-nervis, superior spicula subbrevior ovato-lanceolata subtrinervis; gluma florifera ovato-lanceolata acutiuscula sub 5-nervis palea binervosa marginibus inflexis æquilonga. *Lodiculæ* 3 hyalinæ lanceolatæ acutæ, 2 breviores basin prope leviter incrassatæ. *Caryopsis* libera glumis paullo superantibus, pericarpio tenui separabile; testa indurata colorata: albumen farinaceum; embryo minutus.

Perhaps from the imperfect material then available, Mr. Bentham, in 'Genera Plantarum' iii. 119, describes the glumes as four in number, but the palea proper as wanting. M. Franchet, however (l.c.), describes it as I find it; it is distinctly provided with two lateral nervures only, obtuse, with inflexed margins. General Munro, who in 1876 recognised this plant as a new genus, allied, he thought, to *Milium* and *Oryzopsis*, from the character of the albumen, thought it ought to yield good flour, and might be worth cultivating on that account. Neither Dr. Henry nor M. Franchet makes any reference to an economic application. I have left the genus in the tribe to which Mr. Bentham referred it, though I think Gen. Munro may have been right in his view of its affinity.—D. Oliver.

Fig. 1. Detached spikelets. 2 and 3. Empty glumes. 4. Flowering glume. 5. Palea. 6. Stamens and lodicules. 7. Pistil. 8. Caryopsis and enclosing glumes. 9. Vertical section of caryopsis. *Enlarged*

M.S. del, et lith,

Alafia Barteri, Oliv.

Plate 1992.

ALAFIA BARTERI, *Oliv.*

Apocynaceæ. Subtribe Euechitideæ.

A. Barteri, *Oliv.* (*sp. nov.*); sarmentosa glabra, foliis breviter petiolatis tenuiter coriaceis oblongo- vel oblanceolato-ellipticis obtuse apiculatis basi cuneatis v. leviter rotundatis supra læte viridibus subtus pallidioribus venulis ultimis obscuris, cymis multifloris terminalibus corymbiformibus pedunculatis, bracteis parvis deltoideo-ovatis, pedicellis flore brevioribus, calycis 5-partiti segmentis ovatis obtusis, corollæ rotatæ limbo cum tubo æquilongo, tubo extus glabro medio leviter dilatato ore contracto, limbi lobis oblique rotundatis ciliatis, æstivatione dextrorsum obtegentibus, antheris medium versus tubi insertis inclusis lanceolatis acuminatis basi auriculis brevibus circum stigma conniventibus.

Hab. Nigritania, Onitsha, *Barter*; expedition to interior of Yoruba, *Millson*.

Folia $2\frac{1}{2}$–$3\frac{1}{2}$ poll. longa, $1\frac{1}{2}$–$1\frac{3}{4}$ poll. lata; petiolus $\frac{1}{6}$–$\frac{1}{4}$ poll. longus. *Flores* albi, fragrantes, $\frac{1}{3}$–$\frac{1}{2}$ poll. diam.

For excellent specimens of this plant we are indebted to H.E. Sir A. Moloney, Governor of Lagos, who forwarded to Kew last year the interesting collection made by Mr. Alvan Millson in the Yoruba region, which included the curious new genus *Cyanastrum*, already figured in this volume (Pl. 1965).—D. Oliver.

Fig. 1. Bud. 2. Calyx and pistil. 3. Corolla, laid open. 4. Anther, back and front. 5. Transverse section of ovary. *Enlarged.*

M S. del, et lith.

Marsdenia crinita, Olrv.

Plate 1993.

MARSDENIA CRINITA, *Oliv.*

ASCLEPIADEÆ. Tribe MARSDENIEÆ.

M. crinita, *Oliv.* (*sp. nov.*); volubilis, caule patentim ferrugineo-piloso, foliis petiolatis membranaceis ovato-ellipticis ovatisve breviter acuminatis basi rotundatis cordatisve, supra parce subtus præcipue in nervis venisque setuloso-pilosis, cymis pluri-multifloris breviter pedunculatis extra-axillaribus v. quasi-terminalibus, bracteatis, bracteis linearibus subulatisve, pedicellis flore sæpius longioribus pilosis, calycis 5-partiti segmentis anguste lineari-lanceolatis extus hispidis, corollæ rotatæ tubo calyce dimidio breviore, campanulato ore leviter contracto, limbi lobis patentibus oblongo-lanceolatis obtusis marginibus reflexis, gynostegio cum tubo corollæ æquilongo, coronæ squamis dorso antherarum insertis ovatis obtusis inferne carnosulis centro depressis marginibus liberis leviter reduplicatis.

HAB. Niger Expedition, 1859, Oyo, *Barter*; expedition to interior of Yoruba, 1890, *Millson*.

Folia $3\frac{1}{2}$–$4\frac{1}{2}$ poll. longa, $1\frac{3}{4}$–$2\frac{3}{4}$ poll. lata; petiolus $\frac{1}{2}$–1 poll. longus. *Flores* albi $\frac{1}{2}$ poll. diam.

Our figure is taken from the capital specimen, forwarded to Kew by H.E. Governor Sir Alfred Moloney, collected by Mr. Alvan Millson, Assistant Colonial Secretary, Lagos. It appears to have been collected at the same locality where Mr. Barter found it thirty years ago. It is allied to *M. Schimperi*, Dcne., of Abyssinia, which differs at first sight in its short appressed tawny tomentum.—D. OLIVER.

Fig. 1. Sepal. 2. Gynostegium, with corona. 3. Same, with apices of the coronal scales removed. 4. Pollinia. *Enlarged.*

M.S. del et lith.

Bauhinia Galpini, N.E. Br.

Plate 1994.

BAUHINIA GALPINI, *N. E. Br.*

Leguminosæ. Tribe Bauhinieæ.

B. (§ **Phanera**) **Galpini**, *N. E. Brown in Gard. Chron.* ix. (1891) 728; frutex subscandens, ramulis hornotinis parce ferrugineo-pubescentibus, foliis late rotundatis breviter et late bilobatis lobis apice rotundatis, basi truncatis subcordatisve c. 7-nerviis supra glabris subtus minutissime sericeo-pubescentibus, floribus majusculis coccineis in racemis pauci- v. pluri-floris (sæpius 3–7) terminalibus v. folio oppositis dispositis, bracteis parvis subulatis deciduis, calycis tubo elongato cylindrico stipite ovarii adnato, limbo subspathaceo segmentis linearibus acuminatis, petalis longe unguiculatis lamina rotundata, staminibus 3 anticis antheriferis, ovario ferrugineo-pubescente stipitato exserto, ovulis c. 8–10, leguminibus oblanceolato-oblongis c. 5-spermis valvis lignosis acuminatis oblique striatis.

Hab. S. E. trop. Africa, Namuli, Makua country, *J. T. Last*; near Barberton, Transvaal, *Mrs. Saunders*, *E. E. Galpin* (421); Spelunken, *Nelson* (No. 409).

Frutex 5–10-pedalis. *Folia* $1\frac{1}{2}$–$2\frac{1}{3}$ lata; petiolus $\frac{1}{2}$-pollicaris; stipulæ subulatæ, deciduæ. *Calyx* tubo $\frac{2}{3}$-1 poll. longo; limbo $\frac{3}{4}$ poll. longo. *Petala* cum ungue $1\frac{1}{4}$–$1\frac{1}{2}$ poll. longa; lamina $\frac{2}{3}$ poll. lata. *Legumen* stipitatum compressum 3–4 poll. longum.

A fine species, well deserving cultivation, which first reached us eleven years ago from Mr. W. Nelson.—D. Oliver.

Fig. 1. Stamens and pistil. 2. Longitudinal section of ovary. 3. Legume. 4. Portion of valve of same, with seed. 1 *and* 2 *enlarged*.

M. S. del. et lith.

Hymenocyne glabra, Haw

Plate 1995.

HYMENOGYNE GLABRA, *Haworth.*

Ficoideæ. Tribe Mesembryeæ.

H. glabra, *Haw., Rev. Pl. Succ.* 192; herba annua debilis glabra parum ramosa, foliis suboppositis longiuscule petiolatis carnosulis oblongo-spathulatis plus minus obtusis petiolo basi dilatato semi-amplexicaule margine hyalino, pedunculo terminali folio subæquilongo gracile, calycis lobis interioribus late scarioso-marginatis disco carnoso dorsaliter cornuto, ala nigro-venosa, lobis exterioribus late ovatis in apiculum elongatum terminalem productis, petalis flavidis, stylis 9-12 in disco late peltatim dilatato centro infundibuliforme coalitis, stigmatibus papilliformibus, ovario 9–12-loculare loculis biovulatis, capsula demum uniloculare. Mesembryanthemum glabrum, *Aiton, Hort. Kew.* (1789) ii. 193.

Hab. Near Capetown, on the Rapenburg farm, in sandy soil.—*F. Guthrie.*

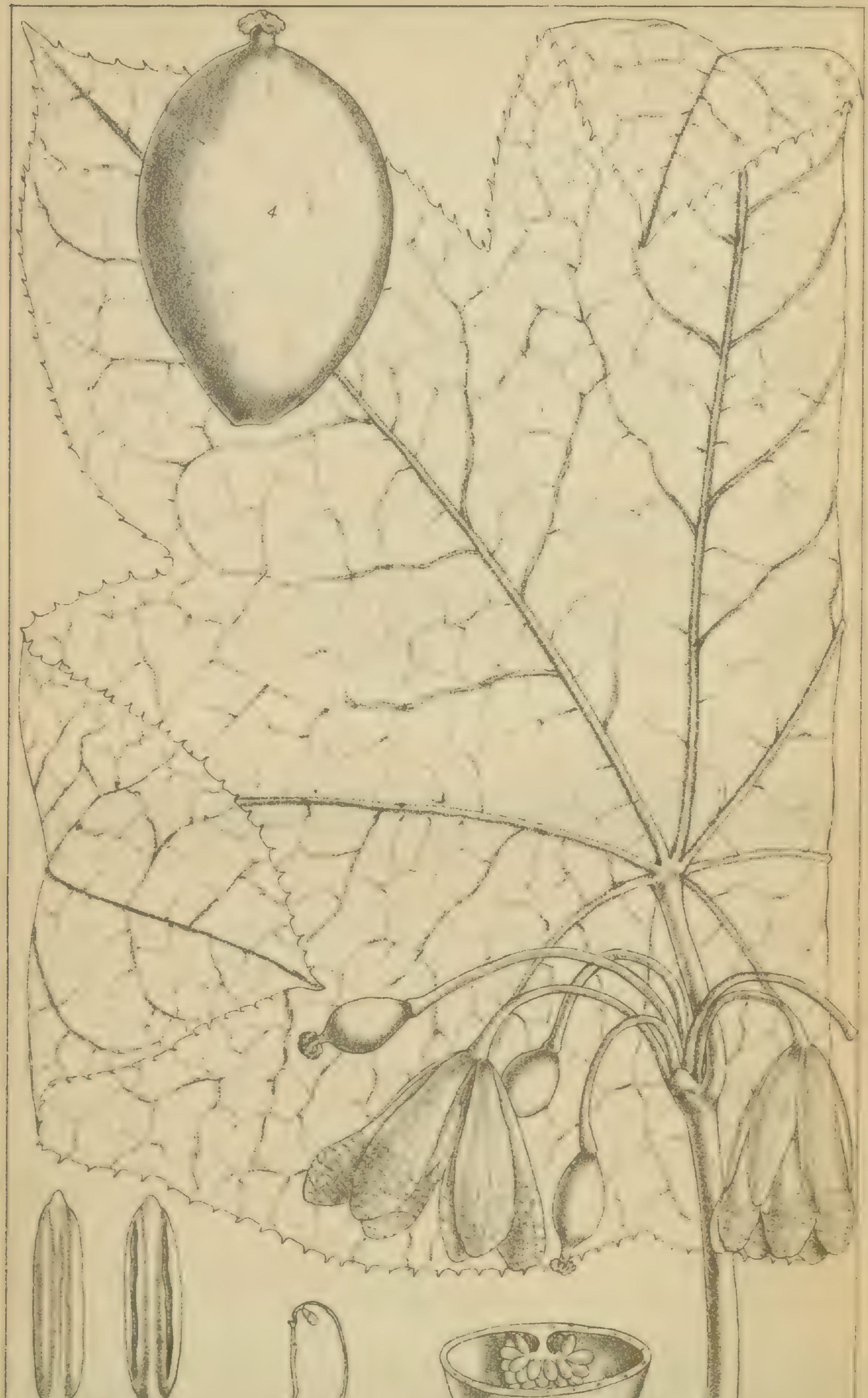
Herba 6 9-uncialis. *Folia* cum petiolo $1\frac{1}{3}$–2 poll. longa, lamina 2–3 lin. lata. *Flores* c. pollicem diam.

Originally introduced by Mr. Masson over a century ago, this singular member of the group of *Mesembryeæ* has been wholly lost sight of until Professor Guthrie recently called the attention of Mr. Bolus to it, who was at once struck by the remarkable connation of the styles into a broad peltate disk bearing stigmatic papillæ upon the upper surface, in this respect differing so materially from all known species of *Mesembryanthemum* that, taking this character in connection with the biovulate cells of the ovary, there seems very good ground for the rehabilitation of Haworth's genus, which has been reduced by Harvey and Sonder (*Fl. Cap.* ii. 459), and is omitted by Bentham and Hooker in 'Genera Plantarum.'

For detail as to the structure of the gynœcium we are indebted to a careful drawing by Mr. Bolus. The capsules of our specimens, which clearly show the separation of the axile placentas as they mature, have unfortunately been spoiled by some boring insect; but Haworth, whose description appears to have been carefully drawn up from fresh specimens, describes the seeds as '. . . magna fusca rotunda plana s. hinc

convexula nuda nitentia, illinc concava ramentacea ; membrana magna marginata s. alata.' The figure of *M. glabrum*, given by Andrews (*Bot. Rep.* i. t. 57), I have omitted purposely to cite under the above description. From the separate figure showing the erect styles, either he has had some quite different plant in view or his figure is inaccurate. I have followed Haworth in accepting Aiton's name, though the description in 'Hort. Kew.' (l.c.) is too brief to be of any use.—D. Oliver.

Fig. 1. Flower, the calyx-lobes and petals removed. 2. Outer, and (3) inner, calyx-lobes. 4. Petals. 5, 6, 7. Stamens. 8. Apex of ovary and stigma. 9. Vertical section of ovary. 10. Transverse section of same. *Enlarged.*



M S del et lith.

Podophyllum versipelle, Hance.

Plate 1996.

PODOPHYLLUM VERSIPELLE, *Hance*.

Berberidaceæ. Tribe Berbereæ.

P. versipelle, *Hance in Journ. Bot.* 1883, 362; foliis caulinis sæpius binis subcentrice peltatis circumscriptione orbicularibus subquadratisve 5–9-lobatis, lobis ovatis v. ovato-deltoideis v. rarius obovatis acutis apiculatisve subulato-denticulatis, glabris v. subtus parce pilosulis, inferiore longiuscule superiore breviter petiolatis, cymis umbelliformibus sæpius 3–8 (12)-floris extra-axillaribus sessilibus, floribus cernuis pedicello glabro v. piloso brevioribus v. eodem interdum subæquilongis, sepalis membranaceis caducis cymbiformibus ovali-oblongis obtusis viridibus, petalis calyce paullo longioribus oblongo-ellipticis v. oblongis obtusis subplanis purpurascentibus, antheris linearibus obtusis filamento glabro complanato 2–4-plo longioribus, fructibus ellipsoideis stigmate coronatis lævibus, pericarpio tenue.

Hab. Prov. Kwangtung, Lofaushan Mtns., *Rev. B. C. Henry*; Prov. Hupeh, various districts, and Szechwan, So. Wushan, *Dr. A. Henry*; Mt. Omei, *Rev. F. Faber*.

Folia 10–18 poll. diam.; petiolus fol. inf. 6–8 poll., fol. sup. 1–2 poll. longus. *Pedicelli* sæpius simplices decurvi, 1–2 poll. longi. *Flores* $\frac{3}{4}$–1 poll. diam.; petala $\frac{1}{2}$–$\frac{3}{4}$ poll. longa. *Fructus* $1\frac{1}{2}$ poll. longus. *Semina* compressa immersa oblonga $\frac{1}{4}$ poll. longa.

The two Chinese species agree in their isostemonous stamens, differing from extra-Chinese species in their several-flowered inflorescence, and from each other in the size of the flowers and position of the inflorescence. In *P. pleianthum* the flowers are three to four times as large as in *P. versipelle*, and originate in the fork between the two leaves which are borne on subequal petioles, while in the present species the floriferous axis is continuous with the upper leaf to about an inch or so below the lamina.—D. Oliver.

'This plant is common in woods and shaded situations in the mountainous regions of Western Hupeh and Eastern Szechwan. It is social in habit, sometimes a hundred or more specimens occurring in one spot. The name given to it by the Chinese in these parts is *pa-chio-lien*—i.e. "eight-angled Nelumbium," from the shape of the

leaf. The book name is *kuei-chiu*, or "devil's mortar," under which designation it is figured and described in the *Chih-wu-ming*, xxiv. 35. In the province of Kwangtung it is colloquially known as *tu-chio-lien*, according to Mr. Ford in "China Review," xvi. 7. In Hupeh this latter name is applied to *Arisæma heterophyllum*, Bl.

'The Ichang gazetteer says that it was formerly sent as tribute from Hupeh to the Emperor. The root is occasionally used as a drug, but it does not apparently enter much into ordinary commerce. Porter Smith, "Contr. Mat. Med. China," p. 46, wrongly identifies the drug as *Caladium*.'—A. HENRY.

Fig 1. Anther, back and front. 2. Transverse section of ovary. 3. Longitud inal section of seed. 4. Fruit. 1 *to* 3 *enlarged*.

M. S. del. et lith.

Dapania scandens, Stapf.

Plate 1997.

DAPANIA SCANDENS, *Stapf.*

Geraniaceæ. Tribe Oxalideæ.

Dapania scandens, *Stapf.* (*n. sp.*); arbor alte scandens, glabra, foliis alternis coriaceis ovato-ellipticis acuminatis basi rotundatis, breviter petiolatis, petiolo medio articulato; inflorescentia racemosa, racemis solitariis v. plerumque 2–3-fasciculatis axillaribus rhachide tenui puberula, floribus bractea minuta ovata ciliata suffultis subsessilibus, calyce membranaceo ad medium lobato, lobis obtusis latis ciliolatis, petalis liberis oblongis obovatisve obtusis calyce duplo longioribus, staminibus 10 alternatim longioribus filamentis in tubum connatis, antheris dorso medio affixis, ovario profunde quinque-sulcato, lobis plerumque lateraliter apicem versus utrinque subalatis, stylis liberis longitudine dimidii vel trientis ovarii, apice incrassatis; ovula in loculo quoque bina oblique superposita; fructus ignotus.

Hab. State of Perak; alt. 300 m. (No, 2724), *C. Curtis.*

Folia 3–5 poll. longa, $1\frac{1}{4}$–$1\frac{3}{4}$ poll. lata; petiolus $\frac{1}{4}$–$\frac{1}{3}$ poll. longus. *Racemi* $1\frac{1}{2}$–3 poll. longi. *Flores* parvi, $1\frac{1}{2}$–2 lin. lati.

The genus *Dapania* was described by Korthals in the 'Nederlandsch Kruidkundig Archief,' iii. 381 (1855). In the same year Planchon (Ann. Sc. Nat. sér. iv. ii. 266) brought the genus *Dapania* close to *Averrhoa*, but without adding new particulars. *Dapania* found its place in the 'Genera Plantarum' after *Connaropsis* with a query, the authors not having seen Korthals' plant. *Dapania* differs from *Connaropsis*, as far as it can be seen from Korthals' description, only by the single ovule and bilabiate aril, whereas *Connaropsis* has two ovules in each cell and no aril. When I examined the present plant from Perak, I had, through Director Suringar's kindness, the opportunity of comparing it with a type specimen of *Dapania racemosa*, Korthals. This had no flowers, but merely the rachis of the raceme upon it; but the similarity of Korthals' plant with ours is in all other respects so great that I am inclined to assume that both belong to the same genus, in spite of Korthals' clear assertion that his plant has a single ovule and a bilabiate aril, and I should on the ground of this similarity even go as far as to consider both to belong to the same species, if Korthals did not add that *D. racemosa* has a bifid scale at the base of the longer

filaments and a glabrous rachis, which latter character is well seen in the type. A confusion of specimens in the Herbarium of Leyden is not probable, as the type sent agrees as far as it goes entirely with the description in Korthals' paper. The only probable suggestion seems to be that Korthals was mistaken in attributing to his plant characters which would bring it clearly to Connaraceæ. He may have mistaken a second abortive ovule for an aril. I, therefore, am of opinion that the present plant from Perak belongs to the same natural group as Korthals' *Dapania racemosa* and a few other species of the Malayan flora which have been collected by Beccari, but are still undescribed. It differs from *D. racemosa* only by its climbing growth, finely-pubescent inflorescence, and the want of scales at the base of the longer filaments. Such scales are present in a closely similar plant collected by Beccari in Sumatra (No. 900); also No. 2951 of Beccari from Sarawak, a similar plant, has the scales, but in a very rudimentary form. Both, however, appear to me sufficiently different from *D. racemosa* and *D. scandens*. On the other hand, the various degrees of development, or total absence of those scales, would scarcely constitute a character of generic value. But if we concede that *D. scandens* belongs really to the genus proposed by Korthals, and if we assume that his assertion that *Dapania* has solitary ovules and arillate seeds was a mistake, then we can no longer maintain the genus *Connaropsis*, which was not published until 1867 (Bentham and Hooker, 'Genera Plantarum,' vol. i. p. 277), and its species should be brought under *Dapania*.—O. Stapf.

Fig. 1. Flower. 2. Same, fully expanded. 3. Vertical section of same. 4. Stamens and pistil. 5. One carpel detached and laid open dorsally. 6. Transverse section of ovary, upper part. 7. Ditto, lower part. *Enlarged.*

M S del. et lith

Touroulia Jenmani, Oliv.

Plate 1998.

TOUROULIA JENMANI, *Oliv.*

Guttiferæ. Tribe Quiineæ.

T. Jenmani, *Oliv.* (*sp. nov.*), *sp. fructiferum*; foliis 4-natim verticillatis simplicibus petiolatis oblongo-ellipticis breviter acuminatis basi in petiolum cuneatim angustatis, glabris minutissime et remote denticulatis, costa subtus nervisque primariis utrinque 17–22 prominulis, venulis ultimis tenuissimis arcte parallelis indistinctis, fructibus lignosis oblique obovoideis apice depressis longitudinaliter sulcatis multi(11–14)-locularibus, seminibus in loculis 2–4 superpositis dense ferrugineo-lanatis albuminosis, albumine copioso carnoso, embryone albumine subæquilongo, cotyledonibus foliaceis late ellipticis radicula apice leviter dilatata obtusissima 3–4-plo longioribus, pericarpio crasso lignoso, mesocarpio lacunoso cavitatibus resinosis radiatim, in sectione transversali, dispositis, epicarpio suberoso-furfuraceo.

Hab. British Guiana, Issorooroo River, *Jenman* (No. 5178).

Although I have no hesitation in referring this to Aublet's imperfectly known and very inadequately described genus *Touroulia*, I am not able to refer it to the species figured by him, even after reasonable allowance for obvious blunders in his description. It seems quite clear that *Touroulia* ought not to be referred to *Quiina*. Both Mons. Planchon and Triana (in Ann. Sc. Nat. sér. iv. 15, 315) and Dr. Engler (in Mart. Flor. Bras. xii. pt. i. 485) agree as to this, though the material in their hands was very imperfect. They describe the seeds as solitary, following Aublet. That may be the case in Aublet's plant, but not in Mr. Jenman's.* Again, the specimens sent us by Mr. Jenman show that the seeds have a copious albumen, in which respect they differ from *Quiina*, so far as has been observed. They are, however, externally very similar to the 'velvet seeds' of Jamaica, the produce of *Quiina jamaicensis*, Gris., clothed with the same long ferruginous indumentum, and strung by the Indians, as beads, for necklaces.

I found the bud of a pistillate flower in which was no trace of stamens; this showed a calyx of four sepals in decussating pairs, seven broadly imbricate petals, and a shortly columnar longitudinally

* Mr. Jenman has another plant (No. 5196) of which he sent a single fruiting specimen, evidently also a *Touroulia*, and with solitary seeds (and radicle inferior). We may hope for flowering specimens both of this and *T. Jenmani*.

striate gynœcium, crowned by a sessile peltate stigma, with from twelve to fourteen radiating stigmatic lines. I conclude, therefore, the flowers are diclinous. The leaves of *T. guyanensis*, Aubl., are described (Engler, l.c.) as with solitary interpetiolar stipules; Planchon and Triana query whether these may not rather be abortive stipuliform leaves. In the young terminal foliaceous buds of our specimens I observe four of these rigid subulate stipuliform organs alternating with as many undeveloped leaves, and apparently inserted at the same level, but I think they may more rightly be regarded as belonging to a reduced cataphyllary outer whorl.

If good flowering specimens reach us it may be well to devote another plate to them.—D. Oliver.

Fig 1, Bud. 2. Ovary. 3. Fruit. 4. Transverse and (5) longitudinal section of fruit. 6. Longitudinal section of seed at right angles to plane of cotyledons. 7. Same in the cotyledonary plane, showing also indumentum of the testa. *Except the fruit, enlarged,*

M. S. del. et lith.

Angelica polymorpha, Max., var.

Plate 1999.

ANGELICA POLYMORPHA, *Maxim*, *var. sinensis.*

Umbelliferæ. Subtribe Angeliceæ.

A. polymorpha, *Maxim. in Mél. Biol.* ix. 187, *var.* sinensis, *Oliv* ; caule glabro tenuiter striato, foliis inferioribus triternatim pinnatifidis superioribus interdum simpliciter pinnatis, segmentis ovatis v. ovato-lanceolatis inferioribus trifidis dentato-incisis, dentibus obtusiusculis breviter apiculatis venulosis subtus glabris v. nervis parce papillosis, petiolo longe vaginante, umbellis sæpe longe pedunculatis 9–13-radiatis, radiis inæqualibus facie interiore scaberulis, involucri bracteis rudimentariis v. obsoletis, umbellulis plurifloris, involucelli bracteolis paucis anguste linearibus, pedicellis gracilibus fructiferis cremocarpio sæpius longioribus, carpophoro ad basin bipartito brachiis gracillimis, mericarpiis valde compressis oblongo- v. subquadrato-ellipticis basi profunde retusis v. cordatis apice rotundatis interdum leviter emarginatis, jugis dorsalibus 3 approximatis elevatis haud alatis, lateralibus in alas nucleo æquilatas dilatatis, vittis vallecularum 4, commissuralibus 2.

Hab. China, Prov. Hupeh, Fang district; Prov. Szechwan, No. Wushan, *Dr. Henry* (*cultivated*, Nos. 6897, 7143). Possibly the same plant, but inadequate, from banks of the North River, *Ford.*

Fructus $3\frac{1}{4}$–$3\frac{1}{2}$ lin. longus, $2\frac{1}{2}$ lin. latus.

This plant is evidently nearly allied to *A. mongolica*, described by M. Franchet, in his valuable 'Plantæ Davidianæ (Mongol.),' 141, and of which he has kindly favoured me with fragments for comparison. Were it not for the total, or all but total, absence of involucre to the umbels, I should have referred this plant to that species. Evidently in Japan and E. temperate Asia there is a group of closely allied forms belonging to the section *Gomphopetalum* of the genus *Angelica*.—D. Oliver.

Dr. Henry supplies the following memorandum:—'*Tang-kuei* is a drug much used by the Chinese and Japanese in the treatment of diseases of women; but apparently two or more different roots are included under this name. In Japan, according to Matsumura, *Ligusticum acutilobum*, S. & Z., furnishes *tang-kuei*; while another kind,

known as *t'u-tang-kuei*, is supplied by *Aralia cordata*, Thunb. See Hanbury, "Science Papers," p. 260, and Porter Smith, "Contr. Mat. Med. China," p. 20.

'We find, from the Chinese Customs "List of Medicines," that there are exported annually from:—

Tientsin—produced in Chili	. . .	451 piculs
Chefoo— „ „ Shantung	. .	80 „
Ichang and Hankow, produced in the provinces of Hupeh, Szechwan, and Shensi		12,243 „

Some is also imported into Shanghai from Japan.

'The source of the drug from the Northern Provinces has not been determined as yet. I found small cultivations of the drug in the mountainous regions of Hupeh, specimens of which were forwarded by me, Nos. 6897 and 7143. This plant is, at any rate, the source of the great bulk of the drug exported from Ichang and Hankow. The root is dug up in the second year of growth, before the plant comes into flower.'—A. Henry.

Fig. 1. Ripe fruit, the mericarps separate, showing bipartite carpophore. 2. Transverse section of a mericarp. *Enlarged*.

M.S.del.et lith.

Eranthemum polyanthum, C B C

Plate 2000.

ERANTHEMUM POLYANTHUM, *C. B. Clarke.*

Acanthaceæ. Subtribe Eranthemeæ.

E. polyanthum, *C. B. Clarke, MSS. in Herb. Kew.*; foliis ellipticis v. oblongo-ellipticis breviter acuminatis basi in petiolum longiusculum attenuatis, supra obsolete puberulis subtus præcipue in venis venulisque minutissime crispato-setulosis, inflorescentia multiflora spiciformi brevissime pedunculata, floribus in cymulis pluri (3–7)-floris sessilibus v. subsessilibus dispositis, calycis pubescentis 5-partiti segmentis lineari-subulatis inæqualibus v. subæqualibus, corollæ hypocrateriformis tubo gracili elongato limbo c. 3-plo longiore, labio superiore bifido lobis oblongis obtusis, inferiore 3-partito lobis æquilongis lobo centrali latiore, lateralibus oblongo-ellipticis, antheris 2 breviter exsertis minute mucronulatis loculis parallelis fere æqualibus, filamentis cum anthera subæquilongis ad apicem tubi insertis, staminodiis 0, ovario fere glabro in stylum attenuato, ovulis geminatis superpositis adscendentibus.

Hab. 'Nempean in the Patkye Mountains, between Assam and Burma,' *Griffith*. Shan States, alt. 3,000 feet, *Lord Lamington*.

Falling outside the area included by Sir Joseph Hooker in his 'Flora of British India,' this species, though named in MS. by Mr. Clarke (who worked up *Acanthaceæ* for the 'Flora') has remained unpublished hitherto. It appears to be the plant rudely figured in the posthumous 'Icones Plantarum Asiaticarum' (iv. t. 426) of Griffith, edited by McClelland, but unaccompanied by any description in his 'Notulæ.' The figure represents the upper lip of the corolla as merely bidentate, and the calyx-segments as longer than in Lord Lamington's plant. But the upper lip in Griffith's original specimen is distinctly bifid, though the calyx-lobes in the same are longer and more subulate than in the plant we figure. Still as Griffith's specimen is more advanced, I think this need not have much importance attributed to it. It would seem a species well suited for introduction as a copiously flowering stove plant. I do not find any note of the colour of the corolla.—D. Oliver.

Fig. 1. Calyx and pistil. 2. Anther, side and front views. 3. Ovary. 4. Longitudinal section of same. *Enlarged.*

INDEX OF SPECIES AND SYNONYMS

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Alafia Barteri, *Oliv.*	1992
Aloe kniphofioides, *Baker*	1939
Alpinia Rafflesiana, *Wall.*	1963
Androsace Henryi, *Oliv.*	1973
Angelica polymorpha, *Max.* var.	1999
Apios macrantha, *Oliv.*	1946
Arenga Listeri, *Becc.*	1985
Arundinaria kurilensis, *Rupr.* var.	1969
Arundinaria Veitchii, N. E. Br.	1969
Astragalus Henryi, *Oliv.*	1959
Bambusa palmata, Lat.-Marl.	1969
—— *Veitchii*, Carr	1969
Bauhinia Galpini, *N. E. Br.*	1994
Blumea balsamifera, *DC.*	1957
Boucerosia mammillaris, N. E. Br. (*ad not.*)	1902
Buddleia officinalis, *Max.*	1972
Cæsalpinia paucijuga, *Benth.*	1977
Calathodes palmata, *Hk. f. & T.*	1935
Caralluma aperta, *N. E. Br.*	1905 A.
—— armata, *N. E. Br.*	1902
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—— hottentotorum, *N. E. Br.* (*ad not.*)	1903
—— linearis, *N. E. Br.*	1903 A.
—— lutea, *N. E. Br.*	1901
—— mammillaris, *N. E. Br.* (*ad not.*)	1902
—— ramosa, *N. E. Br.*	1904
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—— *Massoni*, Sw. (*ad not.*)	1909
—— *pedunculata*, Haw. (*ad not.*)	1909
—— *penduliflora*, Sw. (*ad not.*)	1909
—— *Simsii*, Sw. (*ad not.*)	1909
Catostemma fragrans. *Benth.*	1986
Cephalotaxus Griffithii, *Hk. f.*	1933
Clematis formosana, *O. Ktze.*	1945
Codonopsis Henryi, *Oliv.*	1967
—— Tangshen, *Oliv.*	1966
Cyanastrum cordifolium, *Oliv.*	1965
Cyclea racemosa, *Oliv.*	1938
Dalbergia hupeana, *Hce.*	1968
Dapania scandens, *Stapf.*	1997
Davidia involucrata, *Baill.*	1961
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Dermatobotrys Saundersii, *Bolus*	1940
Dicentra macrantha, *Oliv.*	1937
Didymosperma sp.	1985
Dipsacus asper, *Wall.*	1984
Duvalia angustiloba, *N. E. Br.*	1925
—— Corderoyi, *N. E. Br.* (*ad not.*)	1925
—— elegans, *Haw.* (*ad not.*)	1925
—— hirtella, *S. W.* (*ad not.*)	1925
—— reclinata, *Haw.* (*ad not.*)	1925
Endodesmia calophylloides, *Benth.*	1988
Eperua Jenmani, *Oliv.*	1955
Eranthemum polyanthum, *C. B. C.*	2000
Eucommia ulmoides, *Oliv.*	1950
Eustigma Balansæ, *Oliv.*	1954
Fagus sylvatica, *L.* var.	1936
Fraxinus platypoda, *Oliv.*	1929
—— retusa, *Champ.* var.	1930
Gentiana Herrediana, *Raim.*	1962
Haworthia stenophylla, *Baker*	1974
Henrya Augustiniana, *Hemsl.*	1971
Heteropsis Jenmani, *Oliv.*	1949
Holostemma sinense, Hemsl.	1970
Hoodia Bainii, *Dyer* (*ad not.*)	1905

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Hoodia Barklyi, *Dyer* (*ad not.*)	1905
—— Currori, *Dcne.* (*ad not.*)	1905
—— Gordoni, *Sw.* (*ad not.*)	1905
Huernia humilis, *Haw.*	1905 B.
—— primulina, *N. E. Br.*	1906
—— reticulata, *Haw.* (*ad not.*)	1906
Hymenogyne glabra, *Haw.*	1995
racemosa, *Hk. f.*	1975
Lysimachia Fordiana, *Oliv.*	1983
—— Hemsleyana, *Max.*	1980
—— paridiformis, *Franch.*	1982
—— rubiginosa, *Hemsl.*	1981
Ligusticum sinense, *Oliv.*	1958
Manglietia Fordiana, *Oliv.*	1953
Marsdenia crinita, *Oliv.*	1993
Mesembryanthemum glabrum, Ait.	1995
Metaplexis Hemsleyana, *Oliv.*	1970
Mezoneuron sinense, *Hemsl.*	1960
Microgynœcium tibeticum, *Hk. f.*	1990
Monothylaceum Gordoni, G. Don (*ad not.*)	1905
Naúclea sinensis, *Oliv.*	1956
Neuwiedia veratrifolia, *Bl.*	1987
Nyssa sinensis, *Oliv.*	1964
Obesia decora, Haw. (*ad not.*)	1924
Orbea anguinea, Haw. (*ad not.*)	1907
—— *bufonia*, Haw. (*ad not.*)	1907
—— *Curtisii*, Haw. (*ad not.*)	1907
—— *inodora*, Haw. (*ad not.*)	1907
—— *picta*, Haw. (*ad not.*)	1907
—— *variegata*, Haw. (*ad not.*)	1907
—— *Woodfordiana*, Haw. (*ad not.*)	1907
Oreocharis Henryana, *Oliv.*	1944
Pectinaria mammillaris, Sw. (*ad not.*)	1902
Pedicularis vagans, *Hemsl.*	1978
Phænosperma globosa, *Munro*	1991
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—— grivanus, *N. E. Br.*	1924 A.
—— *mammillaris*, Don (*ad not.*)	1902
—— *pullus*, R. Br. (*ad not.*)	1902
—— *ramosus*, Sw.	1904
Pithecolobium Balansæ, *Oliv.*	1976
Podophyllum versipelle, *Hce.*	1996
Populus lasiocarpa, *Oliv.*	1943
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—— chroösepalus, *Focke*	1952
—— flosculosus, *Focke* (*ad not.*)	1952
—— lasiostylus, *Focke*	1951
—— malifolius, *Focke*	1947
—— pileatus, *Focke* (*ad not.*)	1952
—— simplex, *Focke*	1948
—— sozostylus, *Focke* (*ad not.*)	1952
Scævola hainanensis, *Hce.*	1979
Schizophragma integrifolia, *Oliv.*	1934
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—— *Gordoni*, Hook. (*ad not.*)	1905
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—— ambigua, *Mass.* (*ad not.*)	1916
—— *anguinea*, Jacq. (*ad not.*)	1907
—— *aperta*, Mass.	1905 A.
—— Arnoti, *N. E. Br.*	1915
—— Barklyi, *N. E. Br.*	1909
—— *bufonia*, Jacq. (*ad not.*)	1907
—— *cactiformis*, Hook. (*ad not.*)	1905
—— *Corderoyi*, Hk. f. (*ad not.*)	1925
—— *Curtisii*, R. & S. (*ad not.*)	1907
—— *decora*, Mass. (*ad not.*)	1924
—— *depressa*, Jacq.	1914
—— Desmetiana, *N. E. Br.*	1916
—— *elegans*, Mass. (ad not.)	1925
—— erectiflora, *N. E. Br.*	1921
—— fissirostris, *Jacq.* (*ad not.*)	1922
—— fuscopurpurea, *N. E. Br.*	1913
—— gemmiflora, *Mass.* (*ad not.*)	1910
—— glabricaulis, *N. E. Br.*	1917
—— glanduliflora, *Mass.* (*ad not.*)	1921
—— *Gordoni*, Mass. (*ad not.*)	1905
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—— hircosa, *Jacq.* (*ad not.*)	1910
—— *hirtella*, Jacq. (*ad not.*)	1925
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—— *humilis*, Mass.	1905 B.
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—— lucida, *DC.*	1919
—— Macowani, *N. E. Br.*	1920
—— *moschata*, J. Donn (*ad not.*)	1910
—— *mammillaris*, L. (*ad not.*)	1902
—— namaquensis, *N. E. Br.*	1908
—— olivacea, *N. E. Br.* (*ad not.*)	1920
—— parvipuncta, *N. E. Br.*	1923
—— patula, *W. & var.*	1914
—— pedunculata, *Mass.* (*ad not.*)	1909
—— picta, *J. Donn* (*ad not.*)	1907
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—— pulvinata, *Mass.* (*ad not.*)	1911
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—— —— Mass. (*ad not.*)	1925
—— *reticulata*, Mass. (*ad not.*)	1906
—— rufa, *Mass.*	1922
—— *sororia*, Jacq.	1914
—— trisulca, *J. Donn* (*ad not.*)	1907
—— tsomoensis, *N. E. Br.*	1918
—— *variegata*, Curt. (*ad not.*)	1907
—— variegata, *L.* (*ad not.*)	1907
—— villosa, *N. E. Br.*.	1911
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Streptopus paniculatus, *Baker*	1932
Sycopsis sinensis, *Oliv.*	1931
Tapiscia sinensis, *Oliv.*	1928
Tilia Henryana, *Szyszyl.*	1927
—— mandshurica, *R. & M.* (*ad not.*)	1927
—— Oliveri, *Szyszyl.* (*ad not.*)	1927
—— Miqueliana, *Max.* (*ad not.*)	1927
—— Tuan, *Szyszyl.*	1926
Touroulia Jenmani, *Oliv.*	1998
Trichocaulon cactiformis, *N. E. Br.* (*ad not.*)	1905
—— flavum, *N. E. Br.* (*ad not.*)	1905
Tridentea moschata, Haw. (*ad not.*)	1910
Tysonia africana, *Bolus*	1942
Vaccinium exul, *Bolus*	1941